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Report on White Pine Blister Rust Control

NORTH CENTRAL REGION

Calendar Year 1952

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
REGION V

NORTH CENTRAL REGIONAL OFFICE
301 Metropolitan Building
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Report of

WHITE PINE BLISTER RUST CONTROL

NORTH CENTRAL REGION, 1952

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34

Blister Rust Control Program Annual Report

North Central Region, Calendar Year 1952

Section A. Summary

Statement of Problem

White pine blister rust is an introduced fatal disease of white pine requiring for the completion of its life cycle, two hosts: (1) white pines, and (2) currant and gooseberry bushes, collectively known as ribes. The rust, distributed by windborne spores, cannot spread directly from pine to pine. Spores (aecia) produced on infected pines in the spring are carried to ribes bushes, often many miles away (up to 100 miles or more), where they infect the leaves. During the summer the rust is intensified on ribes leaves through infection by summer spores (uredospores). Later in the summer and early fall, pine infecting spores (sporidia) are produced on ribes leaves. These spores are very delicate and short-lived. They dry out and become harmless a short time after they leave the ribes bushes. Control of the rust consists in removing ribes from within pine stands, and from a zone up to 900 feet around them. In this Region, which embraces the States of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin, the rust is well established in the pine growing portions. The problem is one of protecting individual pine stands, rather than any hope of eradicating the disease.

Purpose of Control Program

The general purpose is to establish and maintain ribes-free, or nearly ribes-free, conditions in and around valuable white pine stands of all ownerships. The immediate objective is to provide the largest amount and most needed protection that funds will permit. Prior to each field season, specific plans are worked out and agreed upon between our organization and the various land-managing agencies, such as the U. S. Forest Service, the U. S. Indian Service, State and other agencies and individuals who are concerned with growing white pine.

Values Involved

No exact figures on the extent of the original pineries in the three Lake States (Michigan, Wisconsin and Minnesota) are available, because at that time no accurate maps existed, and the idea was that the virgin pine resources were inexhaustible. It has been estimated that these pineries occupied about 33,000,000 acres in the northern portions of the three Lake States. (This represents about 60 percent of the now existing forested area.) At the present time white pine occupies about 4,000,000 acres. About one-quarter of this acreage, (1,156,065 acres), chiefly young stands, is considered of sufficient value to protect from blister rust. Since the wet cycle started in 1937, there has been a steady increase in stocking and extension of pine areas through natural reproduction. White pine also continues to be widely used in reforestation plantings.

In January, 1952, a reappraisal of present and potential commercial pine values was made. Foresters and lumbermen in various parts of the Region were consulted. The present and potential value of white pine within the regional control area was calculated to be $460,000,000. Of this the U. S. Forest Service owns 12.4 percent; the U. S. Indian Service, 6.2 percent; state, county and municipal agencies, 28.5 percent; and private interests 52.9 percent.

Damage from blister rust is insidious, cumulative, and not spectacular. Rarely is every tree in a stand killed. The smaller the tree, the more quickly it can be killed by the rust. While trees in the reproduction size class are killed in three to five years after infection, it may require twenty or more years to kill the larger trees. Blister rust is most damaging to young, vigorous trees, which are future crop trees. Presence of ribes bushes in a stand prevents the establishment of white pine reproduction. In such infected areas the rust destroys the white pine seedlings as soon as they appear.

Examples of damage in unprotected stands are common, especially in the northern parts of the three Lake States. In Houghton County, Michigan, in 1936, a study was made of infection in an unprotected roadside planting where trees ranged up to 6 feet in height. At that time, out of 106 trees examined, 89 were infected, and 2 had already been killed by the rust. Examination of this area a few years later showed that all trees had been killed.

In Vilas County, Wisconsin, a school forest of planted white pine covering a couple of acres was established about 15 years ago and was never protected. The surviving trees are now about 25 feet tall. Recent examination revealed that 80 percent of the trees were infected (with 50 percent already killed). The best trees in the stand succumbed to the rust.

An example of damage to unprotected young mature trees is at Beaver Bay, a few miles northeast of Two Harbors, Minnesota, on the north shore of Lake Superior. This stand of 135 acres, primarily of white pine, about 70 years old and 40 to 60 feet tall, is very heavily damaged. In November, 1952, a study was made of an acre selected at random. Most of the 121 trees examined were in the 6 to 14 inch d.b.h. classes. Of the 121 trees examined, 11 had been killed, 101 fatally infected, and 9 not fatally infected. Tops of many of the trees had been killed, and secondary fungi and insects were causing deterioration of the wood. While some salvage cutting could be made now, the stand will not reach commercial maturity for another 30 to 50 years. By that time it is probable that none of these trees will be worth harvesting.

Cooperation

The Bureau of Entomology and Plant Quarantine is responsible for the over-all leadership, coordination and technical direction of the work on lands of all ownerships. In cooperation with state and local authorities, it is directly responsible for work on state and private lands. On the basis of work plans agreed upon, control work is done on white pine stands owned by the U. S. Forest Service; U. S. Indian Service; state, county, municipal agencies; lumber and power companies; and private agencies.

Under the Lea Act, in the discretion of the U. S. Secretary of Agriculture, state and private sources must contribute at least half of the costs of work on state and private lands. During Calendar Year 1952, state and private agencies contributed about two and one-third times as much as the federal government for work on non-federal lands. Cooperative relationships with all public land managers are excellent. The relationship with private pine owners is also good but finances for protecting privately-owned pine still fall far short of meeting the need.

Status of Program

For all ownerships in this Region, the total acreage of valuable white pine listed for protection is 1,156,065 acres. To protect this acreage it is necessary to remove ribes from 3,628,555 acres of control area. This white pine is divided into ownership classes as follows: U. S. Forest Service, 12.5 percent; U. S. Indian Service, 7.2 percent; Non-Federal Public, 28.5 percent; and Private, 51.8 percent.

The program of protecting white pine against blister rust is fairly well on schedule for stands of public ownership, but is greatly lagging on privately-owned lands, as shown in the following percentages, based on control areas:

Status of Control by Ownership Classes

Ownership	Total Control Area (Acres)	Percent of Acreage: Initially Worked	Percent of Acreage: On Maintenance
U. S. Forest Service	308,297	92.0	66.2
U. S. Indian Service	139,417	97.1	71.7
Non-Federal Public	883,556	91.9	46.4
Private	2,297,285	80.5	35.7
Total	3,628,555	85.1	42.3

There remain approximately 540,000 acres of control area needing initial work, and 1,556,000 acres needing rework, or a total of practically 2,100,000 acres. This year 130,177 acres of all ownerships were cleared of ribes. This rate of protection is far from enough to keep ahead of the disease. It must be recognized that blister rust is here to stay, and that blister rust control is a necessary white pine management activity, if young white pine stands are to survive to commerciable maturity.

Accomplishments During 1952

Local Control

About 2,000 more acres were cleared of ribes in 1952 than in 1951. Nearly half of the acres covered in 1952 was initial work, with the remainder quite evenly divided between second and third workings. To give protection to 56,367 acres of white pine, 1,352,914 ribes were removed from 130,177 acres of control area at a cost of 14,805 man-days. Most of the man-days used and ribes destroyed were in the three Lake States.

Over 71,000 acres of control area were placed on maintenance. Through the use of Bureau-State funds, 93,491 acres of state and private lands were worked using 5,029 man-days; Forest Service funds were used in working 20,804 acres at a cost of 5,611 man-days; and the Indian Service worked 15,882 acres using 4,165 man-days. Our Bureau directly hired and paid the labor and supervised work agreed upon on the Lower Michigan, Upper Michigan, Ottawa, Nicolet, Chequamegon, and Chippewa National Forests, and was later reimbursed from Forest Service funds. Work on the Superior National Forest and on all of the Indian Reservations was administratively handled by the agencies concerned, with the Bureau furnishing work plans, training, technical supervision, checking and record keeping, as it did on work of other ownerships.

Surveys

Surveys are necessary to maintain an up-to-date inventory of the control problem; to deduct acres lost through fire, disease, etc.; and to add acres due to newly found areas, increased through natural reproduction, or planting. In 1952, such surveys resulted in increasing the territory subject to further control work by 47,881 acres.

Nursery Sanitation

To insure white pine planting stock free from blister rust, ribes-free conditions within a nursery and for a zone 1,500 feet wide around it are maintained. This is known as nursery sanitation. During 1952, nursery sanitation was performed around pine nurseries, thus giving continuing protection to some 9,000,000 white pine seedlings and transplants. There are 43 white pine growing nurseries in the Region around which ribes-free conditions are being maintained.

Canker Pruning

Very often ribes eradication is done in stands after the rust is present in the pines. In such instances many infected pines can be saved if cankered branches are cut off before the rust mycelium reaches the trunk. Often this pathological pruning can be economically combined with silvicultural pruning to save future crop trees, reduce the blister rust target, and improve the quality of future timber. In 1952, chiefly in Michigan and Wisconsin, 35,368 crop trees were pruned, and 6,764 cankers were removed at a cost of 200 man-days. This was done in late fall.

Cultivated Black Currant Elimination

The program of systematically removing this most susceptible of the ribes from pine growing counties was completed about 10 years ago. However, several "hold outs" remain. During 1952, in Michigan, 299 cultivated black currant plants in 23 locations were destroyed by Michigan State Nursery Inspectors.

Informational Activities

Our two blister rust control films were shown on numerous occasions throughout the Region. In addition informal talks at conferences and classrooms, newspaper articles, distribution of blister rust control literature, escorted tours to pine areas, etc., are bringing results in increasing numbers of private pine owners who eradicate ribes on their own lands. Short notices urging private owners to plant on ribes-free areas are sent out with shipments of white pine planting stock. This is a most effective means of bringing blister rust control information to white pine planters.

Changes in Operations and Trends

Contract ribes eradication was successfully tried out for the first time in this Region in 1952 on the Nicolet National Forest, Wisconsin. An area of 30 acres, estimated to cost $130 to work, was worked by the contract method for $115. It is planned that this method will be used wherever practicable in the future.

The ribes eradication season is being extended through the winter months by the use of chemicals as a basal spray to upright growing ribes. The chief limiting factor will be snow.

Ribes bushes are among the first plants to leaf out in the spring, thus making them most plainly visible during a short period. It is planned to concentrate all available manpower early in the spring in the southerly part of the Region on ribes eradication, and to work them in northerly sections as the season progresses, in order to take the fullest advantage of optimum seasonable development.

In cooperation with the Forest Service, a method of determining white pine values by the stocked quadrat survey instead of a count of pine trees was developed and put into use. This method is not only quicker and simpler than previous methods of survey but provides information on ultimate crop trees of all commercial species. Such information permits the forest manager to appraise more intelligently the need for control, because it tells him what will be left if white pine goes out of the picture.

Changes in Financing

For the second year the Bureau in 1952 used its own funds in hiring and payrolling labor for control work on the Upper Michigan, Ottawa, Nicolet, Chequamegon and Chippewa National Forests. Later the Bureau was reimbursed for such work from Forest Service funds. The advantage of this procedure is that seasonal labor can be employed continuously through the eradication season regardless of the land ownership they work on. Any work on National Forests, of course, was done according to mutually agreed upon plans, and total funds available for each Forest were known.

Changes in Organization

Several Blister Rust Control offices moved into other quarters to share space and facilities with other Bureau projects:

The Blister Rust Control Office at Wooster, Ohio, was moved to Columbus, Ohio, where space, office facilities, and stenographic help will be shared with the Barberry Eradication and Japanese Beetle Control Projects.

The Blister Rust Control Area Leader's Office at Madison, Wisconsin, was moved from the State Capitol Building to another building leased by the State of Wisconsin in Madison. The Barberry Eradication Area Leader's Office at Madison was moved from the Federal Building into the same building as Blister Rust Control. Each Leader occupies a separate room but they share the services of a Clerk-Stenographer.

The Minnesota Blister Rust Control Area Leader's Office was moved from Duluth to St. Paul, Minnesota, where Mr. Ritter will occupy a room adjacent to the Barberry Eradication Office in a building on the University Campus. Both projects will share the services of a Clerk-Stenographer.

Upon the retirement of District Leader, Robert I. Thompson, early in November, 1952, the Blister Rust Control Office at Newaygo, Michigan, was closed. Its functions will be handled from the Area Leader's Office at Traverse City, Michigan.

The Regional Blister Rust Control Project personnel at Minneapolis moved into quarters occupied by the Regional Barberry Eradication Project and both Projects are now sharing the space, equipment, and office facilities in Room 522, Metropolitan Building, Minneapolis.

To assist in other phases of the Bureau's work, as well as to broaden their experience, several of the B.R.C. permanent personnel were given short assignments to other work. District Leader, Ralph W. Nelson, of Duluth, worked on the Halogeton Survey in the West during October and November, and assisted in compilation of data in December. District Leader, J. N. Licke, of Walker, Minnesota, attended a training school at Pierre, South Dakota, to learn the technique of making grasshopper surveys. Control Supervisor, R. G. Doerner, of Columbus, Ohio, scouted for the chinch bug in Illinois for a couple of weeks in November. All of our field personnel are on the watch for barberry bushes in their respective areas. They also report to the proper authority the severity and extent of forest pest outbreaks.

Changes in Distribution of Blister Rust

No additional counties were added to the list of those having ribes infection. The hot dry weather that prevailed in 1952 did not favor the spread of the rust. However, on pine it was initially reported from three counties: Jones County, Iowa; Lapeer County, Michigan; and Houston County, Minnesota. To date, of the 622 counties in the seven states, the rust has been found on ribes in 390 counties, and on pine in 192 counties. Rust is particularly severe in the northern part of the Region.

Juvenile cankers of 1949 and 1950 origins were found widely distributed over the three Lake States. These waves will be much more evident in succeeding years as the infections develop. The years 1949, 1950, and 1951, which had much cool, wet weather were especially favorable for the spread of the rust and pine infection.

Research Results and Their Effect on Program

Experimental work done in 1952 has been entirely along the line of chemical eradication of ribes, especially in the dormant season. Dr. L. W. Melander, of the Barberry Eradication Project, is assisting in outlining treatments, using different hormones and dosages, to kill ribes. The problem can be roughly divided into treatment of ribes growing in swamps and those occurring on uplands. With the aid of field men in Minnesota and Wisconsin, experimental spraying was done in November. Results will be observed next spring.

In Illinois, starting in February, 1952, under a plan outlined by J. K. Kroeber, and put into effect by E. D. Bergeson, upland gooseberries were sprayed each month, using 2,4,5-T in oil in various concentrations, treating only the basal parts of the plants. No sprouts were found last spring on bushes sprayed in February or March. The final results will be seen next spring but the present outlook is hopeful. On the basis of over 1,000 bushes thus treated it was found that chemical treatment is much faster than hand pulling.

If results continue as encouraging as indicated, the eradication season for killing upright growing ribes can be extended into winter even after the ground is frozen. Chemical treatment also saves time as the plants can be sprayed in a fraction of the time it would take to hand-pull them.

Recommendations

On the basis of past experience and developments, we make the following recommendations:

(1) We recommend that ribes eradication by means of chemicals be extended into the dormant season on upland areas where upright growing ribes are concerned. Findings indicate that such ribes can be effectively and economically killed by basal stem treatment, using 2,4,5-T in fuel oil.

(2) Since ribes leaf out about two weeks earlier than associated brush, we recommend that all available personnel work in the southern section of this Region in early spring to eradicate ribes, and to work in the northern section as the season develops, in order to take full advantage of the visibility of ribes during this optimum period. In effectiveness and coverage of ground, much more can be accomplished during the optimum time than in an equal period when all foliage and ferns are out.

(3) Because there has not been a serious outbreak of rust on pines in Indiana and Ohio, in twenty years, and because ribes are scarce in the southern parts of these states, we recommend that following work planned for spring of 1953, the major responsibility for control work in these states be turned over to the state concerned, and Bureau participation be limited to scouting for the rust and giving technical assistance to state agencies when necessary. If a serious outbreak occurs in the future, the Bureau can resume a more active part in the program.

(4) Although ribes are abundant in northern Illinois and northeastern Iowa, and pine infection is relatively heavy in northeastern Iowa, the major pine areas have been given protection, but are not on maintenance. When maintenance is accomplished, we recommend that these states assume major responsibility for control work, and Bureau participation be limited to that described for Ohio and Indiana. One full-time state employee in Illinois is currently handling most of the work there now.

(5) Because there is an active white pine reforestation program in the four lower states, especially in Ohio and Indiana, we recommend that the practice of including with each white pine shipment a brief description of blister rust and its control be continued, and that white pine planters be urged to plant white pine on areas naturally free from ribes, or made so by the owners.

(6) We recommend that members of our permanent organization continue to be given assignments of other Bureau work that do not conflict with their main job of blister rust control. This extends their usefulness as Bureau employees, and broadens their own outlook. Since they are working mostly in forested areas they should give particular attention to the detection and reporting of forest insects and diseases. As has been customary in the past, blister rust control workers will, of course, continue to report findings of common barberry bushes.

(7) Because white pine is continuing to increase in Lower Michigan due to natural reproduction and planting, and needs protection, and because we have closed our Newaygo, Michigan office, with the retirement of Mr. R. I. Thompson, District Leader, we recommend that consideration be given to the assignment of a full-time man to work in Lower Michigan.

(8) Because blister rust is continuing to cause severe losses in unprotected valuable pine stands in the northern sections of this Region, it is recommended that every effort be made to intensify control work there. Although protection of publicly-owned areas is on schedule, many intermingled privately-owned stands go unprotected and are consequently lost. Efforts are being made to stimulate a larger amount of state and private participation. However, these sources are already contributing two and one-third times as much as federal agencies toward the protection of this young pine and it is difficult to expand the ratio without a corresponding increase of federal participation. Availability of federal funds for work on intermingled lands within gross national forest boundaries would help materially in getting this pine protected.

Changes in Federal and State Laws Affecting Program

Federal and State laws affecting blister rust control in this Region are adequate. There were no changes in 1952.

Estimated Commercial Value of White Pine Being Protected. $2,045,000,000

Status of Control on December 31, 1952 (Net Acres)

Item	Forest Service (Acres)	Indian Service (Acres)	Nat.Pk. Serv. (Acres)	Non-Fed. Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. In Cont.Area	144,766	82,917	15	329,921	598,446	1,156,065	-
Total Cont. Area	308,297	139,297	120	883,556	2,297,285	3,628,555	100.0
Worked Initially	283,485	135,264	120	811,672	1,858,374	3,088,915	85.1
On Maintenance	204,034	99,943	0	409,931	819,424	1,533,332	42.3
Needing Init.Work	24,812	4,033	0	71,884	438,911	539,640	14.9
Needing Rework	45,435	19,811	120	401,741	1,038,950	1,555,583	42.9

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
	Calendar Year 1952					
Initial	24,412	63,967	672,328	5,087	10.5	0.08
Second	15,375	33,999	286,592	4,233	8.4	0.12
Third and Other	16,580	32,211	393,994	5,485	12.2	0.17
Total, 1952	56,367	130,177	1,352,914	14,805	10.4	0.11
	Cumulative, 1917 to 1952					
Initial	1,120,093	3,622,004	224,961,559	897,206	62.1	0.25
Second	442,906	1,176,294	29,185,403	213,729	24.8	0.18
Third and Other	142,831	312,943	7,319,510	70,969	23.4	0.23
Total, Cum.	1,705,830	5,111,241	261,466,472	1,181,904	51.2	0.23

Blister Rust Infection, 1952: On pine initially in Jones County, Iowa, Lapeer County, Michigan, and Houston County, Minnesota. Large numbers of juvenile cankers of 1950 origin observed throughout Region. Cumulative: Known on pines and ribes in all seven states; on pines in 192 counties; on ribes in 390 counties, of the 622 counties in the Region. Most severe in north.

Nursery Sanitation, 1952: Nurseries worked: Two in Indiana; one in Ohio; two in Michigan; four in Wisconsin. Cumulative: Ribes-free zones being maintained around 43 of the 90 nurseries originally protected.

Canker Pruning, 1952: 35,368 trees pathologically and silviculturally pruned, and 6,764 cankers removed; 223 fatally infected trees destroyed. Cumulative: 146,052 trees saved by removing 222,768 cankers; 12,149 fatally infected trees removed.

Surveying and Checking, 1952: 57,595 acres control area initially surveyed; 6,955 acres re-surveyed, and 5,474 acres retained; 82,272 acres post-checked, and 84,655 acres retained; 90,273 acres given regular check, and 90,123 acres, or 99.8 percent found satisfactory.

Cultivated Black Currant Elimination, 1952: Michigan State Nursery Inspectors destroyed 299 bushes in 23 plantings previously found. In Iowa 1 planting with 4 bushes found and destroyed. Cumulative: 35,885 plantings with 298,666 plants found; 34,957 plantings with 292,451 plants destroyed.

Control Area Permits, 1952: 363 applications received in 4 states; 328 approved, 16 rejected; 19 voluntarily cancelled.

Summary of White Pine Blister Rust Control - December 31, 1952

ILLINOIS

Estimated Commercial Value of White Pine Being Protected: $1,662,500

Status of Control on December 31, 1952. (Net Acres)

Item	Non-Federal Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	1,248	800	2,048	-
Total Control Area	6,352	4,537	10,889	100.0
Worked Initially	6,238	4,379	10,617	97.5
On Maintenance	1,218	519	1,737	16.0
Needing Initial Work	114	158	272	2.5
Needing Rework	5,020	3,860	8,880	81.6

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre: Ribes	Per Acre: Man-Days
Calendar Year 1952						
Initial	72	338	19,451	18	57.5	0.05
Second	-	-	-	-	-	-
Third and Other	30	64	2,925	12	45.7	0.19
Total, 1952	102	402	22,376	30	55.7	0.07
Cumulative 1932 to 1952						
Initial	3,526	20,724	1,533,371	3,923	74.0	0.19
Second	2,349	10,534	618,105	2,543	58.7	0.24
Third and Other	2,906	13,261	573,087	3,704	43.2	0.28
Total, Cum.	8,781	44,519	2,724,563	10,170	61.2	0.22

Blister Rust Infection, 1952: No new counties. Cumulatively found in northern Illinois on pine in 7 counties; on ribes in 24 of the 102 counties in the state.

Nursery Sanitation, 1952: None. Cumulative: Ribes-free zones being maintained around 2 of the 8 nurseries originally protected.

Surveying and Checking, 1952: 293 acres of control area initially surveyed; 1422 acres re-surveyed, and 90 acres retained; 307 acres post-checked and none retained; 402 acres given regular check after ribes eradication, and 312 acres, or 77.6% found satisfactory.

Cultivated Black Currant Elimination, 1952: None. Cumulative: 532 plantings with 4,171 plants found; 60 plantings with 761 plants destroyed.

Summary of White Pine Blister Rust Control - December 31, 1952

INDIANA

White Pine Being Protected: Natural: 323 Acres; Planted: 10,241; Total: 10,564 Acres. Estimated Value: $6,920,000.

Status of Control (Net Acres)

Item	Forest Service (Acres)	Non-Federal Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	18	3,169	7,377	10,564	-
Total Control Area	179	18,209	74,189	92,577	100.0
Worked Initially	179	17,322	61,998	79,499	85.9
On Maintenance	179	15,454	49,309	64,942	70.1
Needing Initial Work	-	887	12,191	13,078	14.1
Needing Rework	-	1,868	12,689	14,557	15.7

Local Control, All by Bureau-State (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
		Calendar Year 1952				
Initial	310	2,085	47	21	Tr.	0.01
Second	75	251	105	4	0.4	0.02
Third & Other	378	1,531	30	4	Tr.	Tr.
Total	763	3,867	182	29	Tr.	0.01
		Cumulative, 1933 to 1952				
Initial	10,133	95,211	475,971	4,061	5.0	0.04
Second	4,571	24,330	103,732	1,125	4.3	0.05
Third & Other	2,085	13,573	35,493	360	2.6	0.03
Total Cumulative	16,789	133,114	615,196	5,546	4.6	0.04

Blister Rust Infection, 1952: No new counties. Cumulative: On pine in 3 counties; on ribes in 53 counties of the 92 counties in the state.

Nursery Sanitation: 1952: Vallonia (Federal) and Jackson (State) Nurseries worked. Sanitation zones maintained around 3 of the 6 nurseries originally protected.

Canker Pruning, 1952: None; Cumulative: 11 cankers removed from 8 trees.

Surveying and Checking, 1952: 2,080 acres control area initially surveyed; 280 acres resurveyed and 240 acres retained; 3,385 acres post-checked and 2,051 acres retained; all areas checked satisfactory; 3,428 acres placed on maintenance.

Cultivated Black Currant Elimination, 1952: None. Cumulative: 5 plantings, 20 plants found; 3 plantings with 15 plants destroyed.

Summary of White Pine Blister Rust Control - December 31, 1952

IOWA

Estimated Commercial Value of White Pine Being Protected: $6,920,000.

Status of Control on December 31, 1952. (Net Acres)

Item	Indian Service (Acres)	Non-Federal Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	50	589	5,366	6,005	-
Total Control Area	500	3,625	46,650	50,775	100.0
Worked Initially	500	3,573	30,784	34,857	68.6
On Maintenance	206	199	18,826	19,231	37.9
Needing Initial Work	-	52	15,866	15,918	31.4
Needing Rework	294	3,374	11,958	15,626	30.8

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
			Calendar Year 1952			
Initial	41	130	17,762	77	136.6	0.59
Second	15	144	11,669	74	81.0	0.51
Third and Other	75	214	10,748	76	50.2	0.36
Total, 1952	131	488	40,179	227	82.3	0.47
			Cumulative, 1933 to 1952			
Initial	3,517	39,471	3,632,911	27,543	92.0	0.70
Second	1,229	8,247	755,390	5,608	91.6	0.68
Third and Other	691	2,354	169,197	1,621	71.9	0.69
Total, Cumulative	5,437	50,072	4,557,498	34,772	91.0	0.69

Blister Rust Infection, 1952: On pine initially in Jones County. Cumulative: On pine in 10 counties in northeast; on ribes in 56 of the 99 counties in the state.

Nursery Sanitation, 1952: None. Cumulative: Ribes-free zones maintained around 7 of the 9 nurseries originally protected.

Canker Pruning, 1952: 24 cankers removed from 18 trees; 8 fatally infected trees removed. Cumulative: 773 trees saved by removing 2,014 cankers from them; 756 fatally infected trees destroyed.

Surveying and Checking, 1952: 126 acres of control area initially surveyed; 5 acres resurveyed and retained; 760 acres post-checked and retained; 484 acres checked after eradication, and found satisfactory.

Cultivated Black Currant Elimination, 1952: 1 planting with 4 plants found and destroyed. Cumulative: 1,612 plantings with 7,335 plants found; 1,607 plantings with 7,314 plants destroyed.

Summary of White Pine Blister Rust Control on December 31, 1952

MICHIGAN

Estimated Commercial Value of White Pine Being Protected: $221,520,000

Status of Control on December 31, 1952 (Net Acres)

Item	Forest Service (Acres)	Nat. Park Service (Acres)	Non-Fed. Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	63,804	15	126,744	213,055	403,618	-
Total Control Area	167,343	120	305,731	727,444	1,200,638	100.0
Worked Initially	165,263	120	287,524	635,773	1,088,680	90.7
On Maintenance	130,149	0	164,979	245,729	540,857	45.0
Needing Initial Work	2,080	0	18,207	91,671	111,958	9.3
Needing Rework	35,114	120	122,545	390,044	547,823	45.6

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
		Calendar Year 1952				
Initial	3,894	10,130	43,082	357	4.3	0.04
Second	5,994	13,977	83,269	1,071	6.0	0.08
Third and Other	8,536	18,714	155,426	2,463	8.3	0.13
Total, 1952	18,424	42,821	281,777	3,891	6.6	0.09
		Cumulative 1918 to 1952				
Initial	447,187	1,363,622	65,562,224	281,722	48.1	0.21
Second	179,594	474,340	8,458,536	58,366	17.8	0.12
Third and Other	62,197	146,389	1,493,726	17,352	10.2	0.12
Total Cum.	688,978	1,984,351	75,514,486	357,440	38.1	0.18

Blister Rust Infection, 1952: On pine initially in Lapeer County. Cumulative: On pines in 55 counties; on ribes in all of the 83 counties in the state.

Nursery Sanitation, 1952: Roth State, and Chittenden Forest Service Nurseries reworked. Cumulative: Ribes-free zones being maintained around 9 of the 15 nurseries originally protected.

Canker Pruning, 1952: 9,400 trees silviculturally and pathologically pruned, and 2,250 cankers removed. Cumulative: 109,235 cankers removed to save 53,160 trees; 520 fatally infected trees destroyed.

Surveying and Checking, 1952: 15,451 acres control area initially surveyed; 2,534 acres re-surveyed, and 2,794 acres retained; 28,060 acres post-checked, and 27,918 acres retained; 42,821 acres checked after ribes eradication; and all found satisfactory.

Cultivated Black Currant Elimination, 1952: 23 plantings with 299 plants previously found, destroyed by state inspectors. Cumulative: 15,036 plantings with 151,146 plants found; 15,023 plantings with 150,834 plants destroyed.

Control Area Permits, 1952: 86 applications received; 62 approved; 9 rejected; 15 voluntarily cancelled.

Summary of White Pine Blister Rust Control - December 31, 1952

MINNESOTA

White Pine Being Protected: Natural: 196,625 acres; Planted: 12,061 acres; Total: 208,686 acres. Estimated Value: $40,880,000.

Status of Control (Net Acres)

Item	Forest Service (Acres)	Indian Service (Acres)	Non-Fed. Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	42,347	21,970	56,004	88,365	208,686	-
Total Control Area	70,192	32,436	115,482	277,494	495,604	100.0
Worked Initially	51,795	32,227	76,670	207,758	368,450	74.3
On Maintenance	33,579	24,513	24,648	39,235	121,975	24.6
Needing Initial Work	18,379	209	38,812	69,736	127,154	25.7

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
		Calendar Year 1952				
Initial	1,315	2,287	88,397	911	39	.40
Second	921	1,566	34,571	511	22	.33
Third and Other	4,153	5,153	86,446	1,192	17	.23
Total, 1952	6,389	9,006	209,414	2,614	23	.29
		Cumulative, 1917 to 1952				
Initial	179,318	428,651	62,259,172	169,911	145	.40
Second	67,547	129,368	8,544,687	48,490	66	.37
Third and Other	33,024	48,215	2,851,278	23,294	59	.48
Total, Cumulative	279,889	606,464	73,655,137	241,695	121	.40

Blister Rust Infection, 1952. Infection found on pine in Houston county. Cumulative: On pines in 39 counties; on ribes in 38 of the 87 counties in the state. Rust prevalent in all pine growing counties, especially severe in northeastern Minnesota.

Nursery Sanitation, 1952. None. Cumulative: Ribes-free zones maintained around 6 of the 17 nurseries originally protected.

Canker Pruning, 1952. None. Cumulative: 80,490 cankers removed from 46,542 trees; 6,434 infected trees destroyed.

Surveying and Checking, 1952. 1,367 acres control area initially surveyed; 1,619 acres resurveyed and 1,403 acres retained; 18,818 acres post-checked and 17,054 acres retained; 6,326 acres checked for ribes after eradication and all found satisfactory.

Cultivated Black Currant Elimination, 1952. None. Cumulative: 3,261 plantings, with 23,309 plants found, and all destroyed.

Control Area Permits, 1952: 53 applications received; 49 approved; 4 voluntarily cancelled.

Summary of White Pine Blister Rust Control - December 31, 1952

OHIO

White Pine Being Protected: Natural: 3,200 Acres; Planted: 19,704 Acres; Total: 22,904 Acres. Estimated Value: $13,150,000.

Status of Control (Net Acres)

Item	Forest Service (Acres)	Non-Federal Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	515	9,134	13,255	22,904	-
Total Control Area	4,029	55,186	157,007	216,222	100.0
Worked Initially	4,029	43,740	132,810	180,579	83.5
On Maintenance	4,029	18,369	73,083	95,481	44.2
Needing Initial Work	-	11,446	24,197	35,643	16.5
Needing Rework	-	25,371	59,727	85,098	39.4

Local Control, All by Bureau-State (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre: Ribes	Per Acre: Man-Days
		Calendar Year 1952				
Initial	524	2,540	5,157	46	2.0	0.02
Second	227	1,060	125	6	0.1	0.01
Third and Other	788	2,636	4,336	58	1.6	0.02
Total	1,539	6,236	9,618	110	1.5	0.02
		Cumulative, 1933-1952				
Initial	17,850	214,642	2,585,582	33,127	12.0	0.15
Second	6,876	54,107	727,018	12,479	13.4	0.23
Third and Other	4,829	19,852	187,990	2,584	9.5	0.13
Total Cumulative	29,555	288,601	3,500,590	48,190	12.1	0.17

Blister Rust Infection, 1952: No new counties. Cumulative: On pine in 10 counties; on ribes in 65 counties of the 88 counties in the state.

Nursery Sanitation, 1952: Kaneff Nursery worked initially. Cumulative: Ribes-free zones maintained around 8 of the 17 nurseries originally protected.

Canker Pruning, 1952: None. Cumulative: 126 cankers removed from 44 trees; 3 infected trees removed.

Surveying and Checking, 1952: 2,996 acres control area initially surveyed; 1,095 acres resurveyed and 1,142 acres retained; 4,361 acres post-checked and 3,684 acres retained; 3,049 acres checked for ribes after eradication and all found satisfactory.

Cultivated Black Currant Elimination, 1952: None. Cumulative: 8,838 plantings, 75,605 plants found; 8,406 plantings; 73,117 plants destroyed.

Control Area Permits, 1952: 14 applications received; 8 approved; 6 rejected.

Summary of White Pine Blister Rust Control on December 31, 1952

WISCONSIN

Estimated Commercial Value of White Pine Being Protected: $172,753,000

Status of Control on December 31, 1952 (Net Acres)

Item	Forest Service (Acres)	Indian Service (Acres)	Non-Fed. Public (Acres)	Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	38,082	60,897	133,033	270,228	502,240	-
Total Control Area	66,554	106,361	378,971	1,009,964	1,561,850	100.0
Worked Initially	62,219	102,537	376,605	784,872	1,326,233	84.9
On Maintenance	36,098	75,224	185,064	392,723	689,109	44.1
Needing Initial Work	4,335	3,824	2,366	225,092	235,617	15.1
Needing Rework	26,121	27,313	191,541	392,149	637,124	40.8

Local Control, All Agencies (Gross Acres)

Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Per Acre Man-Days
		Calendar Year 1952				
Initial	18,256	46,457	498,432	3,657	10.7	0.08
Second	8,143	17,001	156,853	2,567	9.2	0.15
Third and Other	2,620	3,899	134,083	1,680	34.4	0.43
Total, 1952	29,019	67,357	789,368	7,904	11.7	0.12
		Cumulative 1917 to 1952				
Initial	458,562	1,459,453	88,912,328	376,919	60.9	0.26
Second	180,740	475,368	9,977,935	85,118	21.0	0.18
Third and Other	37,099	69,299	2,008,739	22,054	29.0	0.32
Total, Cum.	676,401	2,004,120	100,899,002	484,091	50.3	0.24

Blister Rust Infection, 1952: No new counties. Cumulative: On pine in 68 counties; on ribes in all 71 counties in the state.

Nursery Sanitation, 1952: Hayward and Hugo Sauer State Nurseries, McKay No. 7, and Nepco, private nurseries worked. Cumulative: Ribes-free zones maintained around 10 nurseries producing about 20 million white pines out of 19 originally protected.

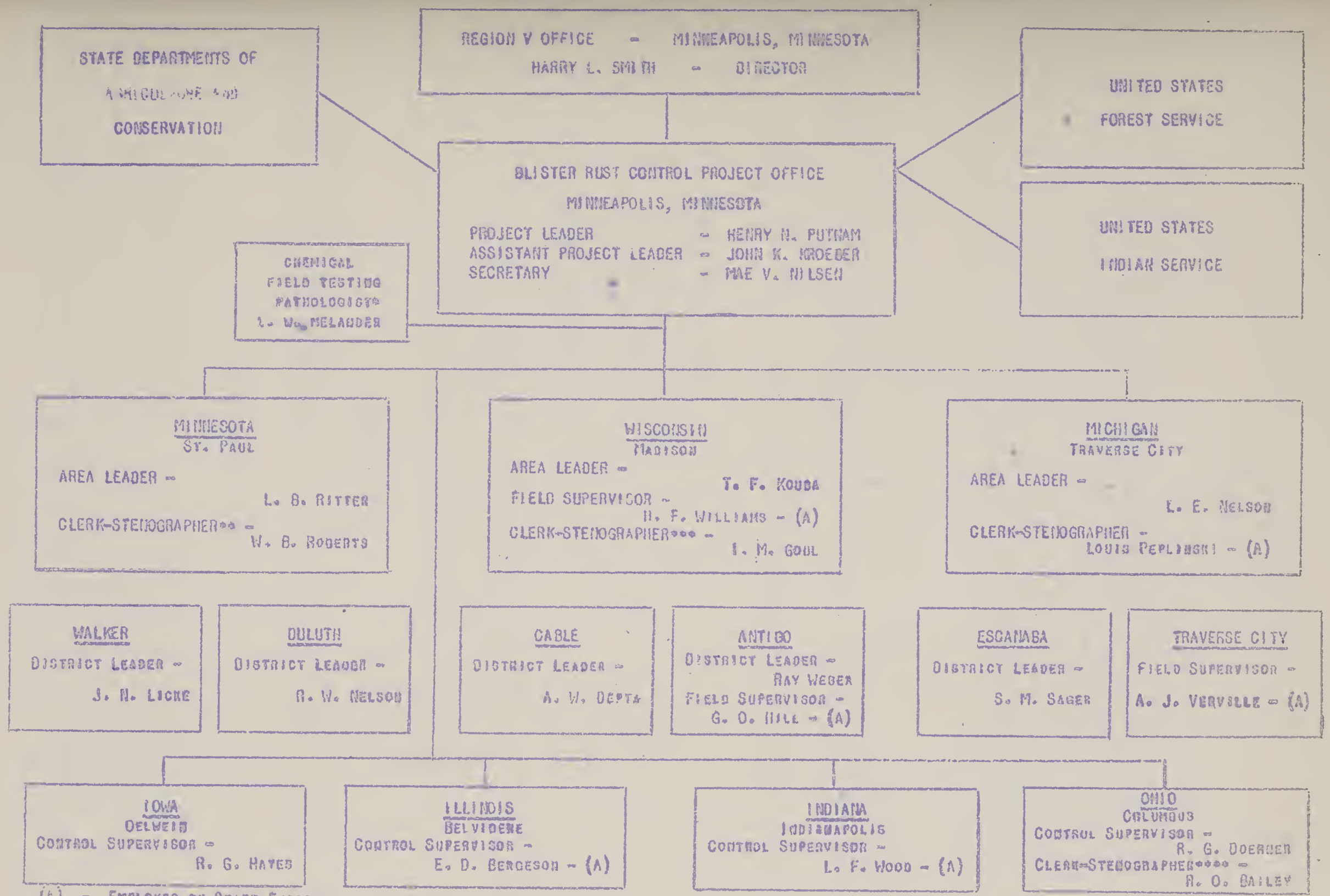
Canker Pruning, 1952: 25,950 trees silviculturally and pathologically pruned, and 4,490 cankers removed; 215 fatally infected trees destroyed. Cumulative: 45,525 trees silviculturally and pathologically pruned, and 30,889 cankers removed; 4,426 fatally infected trees destroyed.

Surveying and Checking, 1952: 41,686 acres control area initially surveyed; 26,581 acres post-checked, and increased to 33,188 acres; 37,596 acres checked after ribes eradication, and 37,536 acres, or 99.8 percent found satisfactory.

Cultivated Black Currant Elimination, 1952: None. Cumulative: 6,601 plantings, with 37,080 plants found; 6,597 plantings with 37,051 plants destroyed.

Control Area Permits, 1952: 186 applications received; 185 approved; 1 rejected.

ORGANIZATION CHART, NORTH CENTRAL REGION, AS OF DECEMBER 31, 1952



(A) - EMPLOYED ON STATE FUNDS
* - CHEMICAL FIELD TESTING SHARED WITH BARBERRY ERADICATION PROJECT
** - OFFICE SPACE AND CLERICAL HELP SHARED WITH BARBERRY ERADICATION AND GRASSHOPPER CONTROL
*** - OFFICE SPACE AND CLERICAL HELP SHARED WITH BARBERRY ERADICATION
**** - OFFICE SPACE AND CLERICAL HELP SHARED WITH BARBERRY ERADICATION AND JAPANESE BEETLE CONTROL

CHART 1

Section B. Control Activities

Foreword

Section A of this report is designed to give an over-all picture of progress in and present status of the blister rust control program in Region V. Section B will include details on which summaries are based, both tabular and narrative; separate excerpts covering work on National Forests and Indian Reservations; and basic tables. Section B is designed primarily as a reference for use of project personnel in providing a permanent record of accomplishments useful in planning and directing field operations. Where subjects are adequately covered in Section A, they will not be repeated in Section B.

Authorization and Sources of Funds

As in the past, the work in 1952 was continued under Memoranda of Agreement drawn up between the responsible State Agencies and the Bureau of Entomology and Plant Quarantine.

During 1952, work was performed with funds furnished from the following sources:

1. State and Private

   a. Direct aid (Ribes eradication, supplemented by W-e Federal)
   b. Indirect aid (Other Services)

2. Federal Blister Rust Appropriation

   a. W-a Leadership, Coordination, and Technical Direction
   b. W-e Cooperative blister rust control on State and Private lands. (Matched by State direct aid)
   c. 74 Blister Rust Control on National Forests
   d. 77 Blister Rust Control on Indian Reservations

Organization

Changes in organization in 1952 are shown in Section A, and will not be repeated here. The organization as of December 31, 1952, is shown in Chart 1.

Labor Conditions

As in previous years, labor was largely made up of local people commuting to and from work areas. In Michigan, state prisoners from near-by honor camps were again effectively used. One work camp on the Superior National Forest was operated, manned both by college students and local woodsmen. Indians of both sexes were used on Indian Reservations. The total man-month employment (Table 11) in 1952 was 926 man-months, as compared with 1,114 in 1951. In 1952, there was an average of about 185

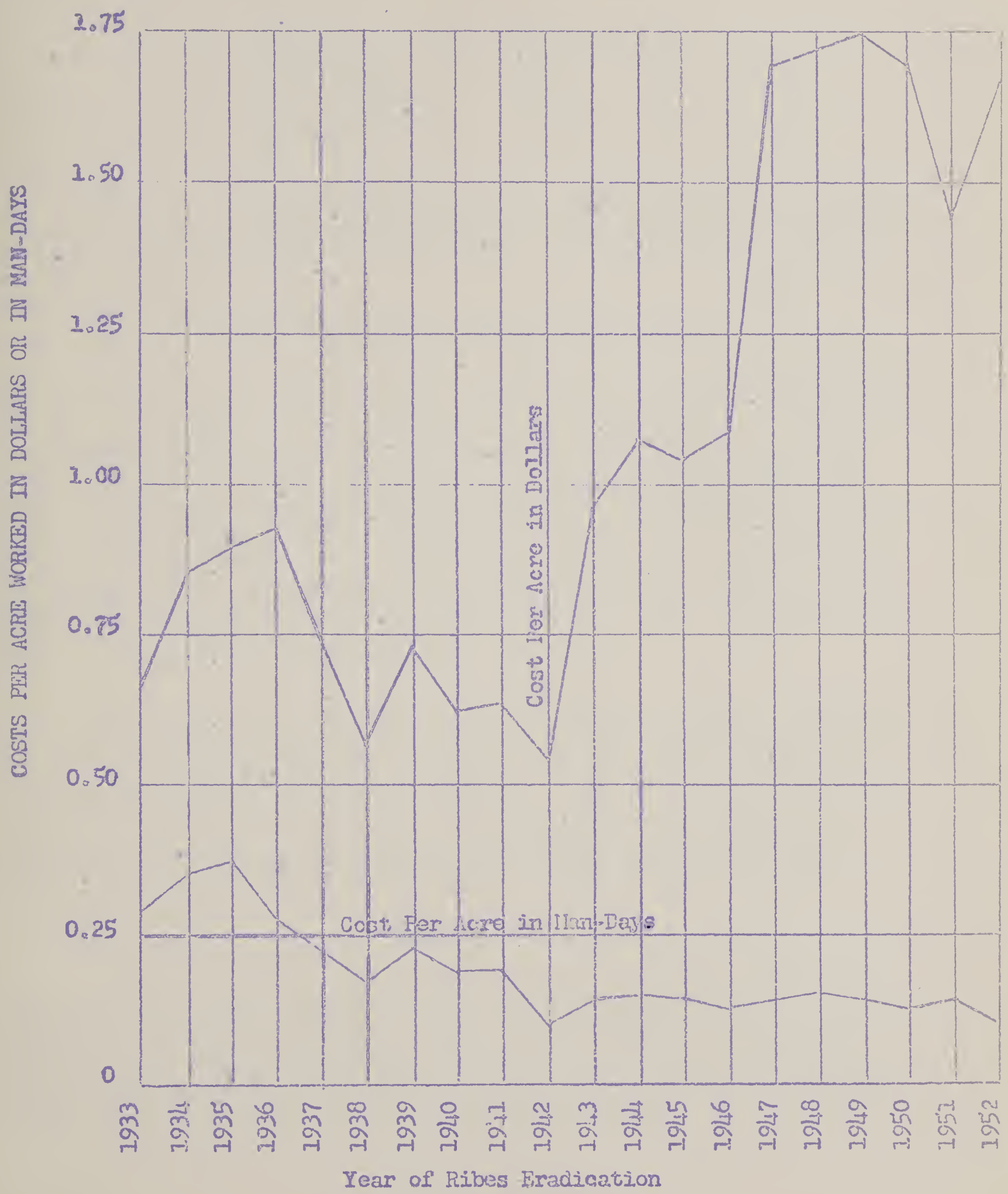
C H A R T 2. Costs Per Acre of Ribes Eradication,

All Workings, All Ownerships, Expressed in

Dollars Per Acre and Man-Days Per Acre

1933 to 1952

NORTH CENTRAL REGION



persons in the summer (peak of 204 in July) and from 19 to 30 persons during the winter months.

Wage rates for Bureau employees were established on February 29, 1952, and were the highest that have been used. Authorized wage rates for the seven states in the North Central Region were as follows:

Foreman	$1.45	per	hour
Scout	1.35	"	"
Crew Leader	1.35	"	"
Truck Driver	1.35	"	"
Laborer II	1.20	"	"
Laborer I	1.10	"	"

Laborers employed on National Forests were paid at rates authorized for each Forest. In general, wage rates on Indian Reservations were close to those on National Forests. Wages paid from state, county and private sources varied considerably.

Costs Per Acre Worked in Man-Days and Dollars

Costs per acre expressed both in dollars and in man-days are shown in Chart 2. Man-days used per acre are quite closely related to number of ribes per acre. From 1933 to 1952, the cost per acre in man-days is shown as a generally descending curve. Man-days per acre were highest from 1933 to 1935. At the beginning of the emergency relief programs, we were using large numbers of untrained laborers without sufficient experienced field supervision. Also, we were extending control zones into live swamps, where ribes were abundant and work slow. As time went on, methods of work improved, crews became more experienced, and we worked only the edges of swamps. These factors brought down the time required to work an acre. Each year, from 1943 to 1952, the time required to work an acre has been fairly constant, with a tendency to be reduced further.

On the other hand, the cost per acre worked, expressed in dollars, has risen rapidly beginning in 1943. Higher wages are, of course, responsible. Costs of protection, expressed in dollars, are not comparative because of the fluctuating value of the dollar. Costs in man-days per acre are much more closely related to work conditions, and more useful in making plans and estimates. Where the dollar value is reasonably stable, as it was from 1933 to 1942, the curves of dollars and man-days per acre show some similarity, but there is little similarity in the curves from 1943 to 1952.

Surveys

Results of surveys, necessary to maintain a current inventory of white pine, are shown in Table 1, by states and type of survey. These surveys were performed chiefly by key personnel when not engaged in supervising control operations. Reductions in acreages in the control problem, due to blister rust, fire, logging, etc., were more than offset by additions due to natural reproduction and planting. There were net

increases in acres of pine in all of the states except Minnesota, where a small decrease was recorded. For the Region as a whole, surveys resulted in a net increase of 28,372 acres of white pine and 47,881 acres of control area. The largest net increase occurred in Wisconsin. If more survey work could have been done, it is probable a much larger net increase would have resulted in the Region.

A simpler, quicker and more useful method of determining white pine values was developed in 1952 in cooperation with the U. S. Forest Service. Heretofore, we have depended upon counts of white pine by size classes on strip surveys to obtain this information. The new method is known as the stocked quadrat survey. At predetermined distances, usually at half-chain intervals, the presence or absence of the expected crop tree by species and size class on a circular five hundredth acre is recorded. Tables have been prepared for interpretation of these data on an acre basis. A rule of not spending over one man-day for control per 5,000 board feet of expected yield has been developed. Data from the stocked quadrat survey enables the forest manager not only to measure pine values against expected control costs, but also to determine what timber values remain if white pine is lost to blister rust. The method is good also from the surveyor's viewpoint, since it allows him to determine ribes conditions as he travels between quadrats.

Local Control in 1952

Local control accomplishment in 1952 compares favorably with that of 1951. For all ownerships and workings, 56,367 acres of white pine were given protection by the removal of 1,352,914 ribes from 130,177 acres of control area costing 14,805 man-days of labor in 1952. This represents about 1,700 more acres worked than in 1951, although about 9,700 less ribes were destroyed and 1,500 fewer man-days were used in 1952 than in 1951. About half the acreage worked in 1952 was initial and half was rework. Details of work done in 1952 are given in Tables 2 and 3.

On the basis of ownership classes, approximately 35 percent of the acreage worked in 1952, was privately-owned, 37 percent was owned by non-federal public agencies, 16 percent by the U. S. Forest Service, and 12 percent by the U. S. Indian Service.

For the first time in this Region, contract ribes eradication was performed. This was done on a 30-acre area on the Nicolet National Forest. It was previously estimated the job could be done for $130. Two experienced men contracted to do the work for $115. They used the drag-line method. Checking on the completed job showed that excellent work was done. It is planned to use the contract ribes eradication method wherever feasible.

On the Superior National Forest, three-man crews were used to remove ribes in pre-strung lanes about three chains wide. Where concentrations of ribes were encountered, each crew worked in close formation to clean out such concentrations. This scout method has advantages over closer crew formation in territory where ribes occur in patches.

CHART 3

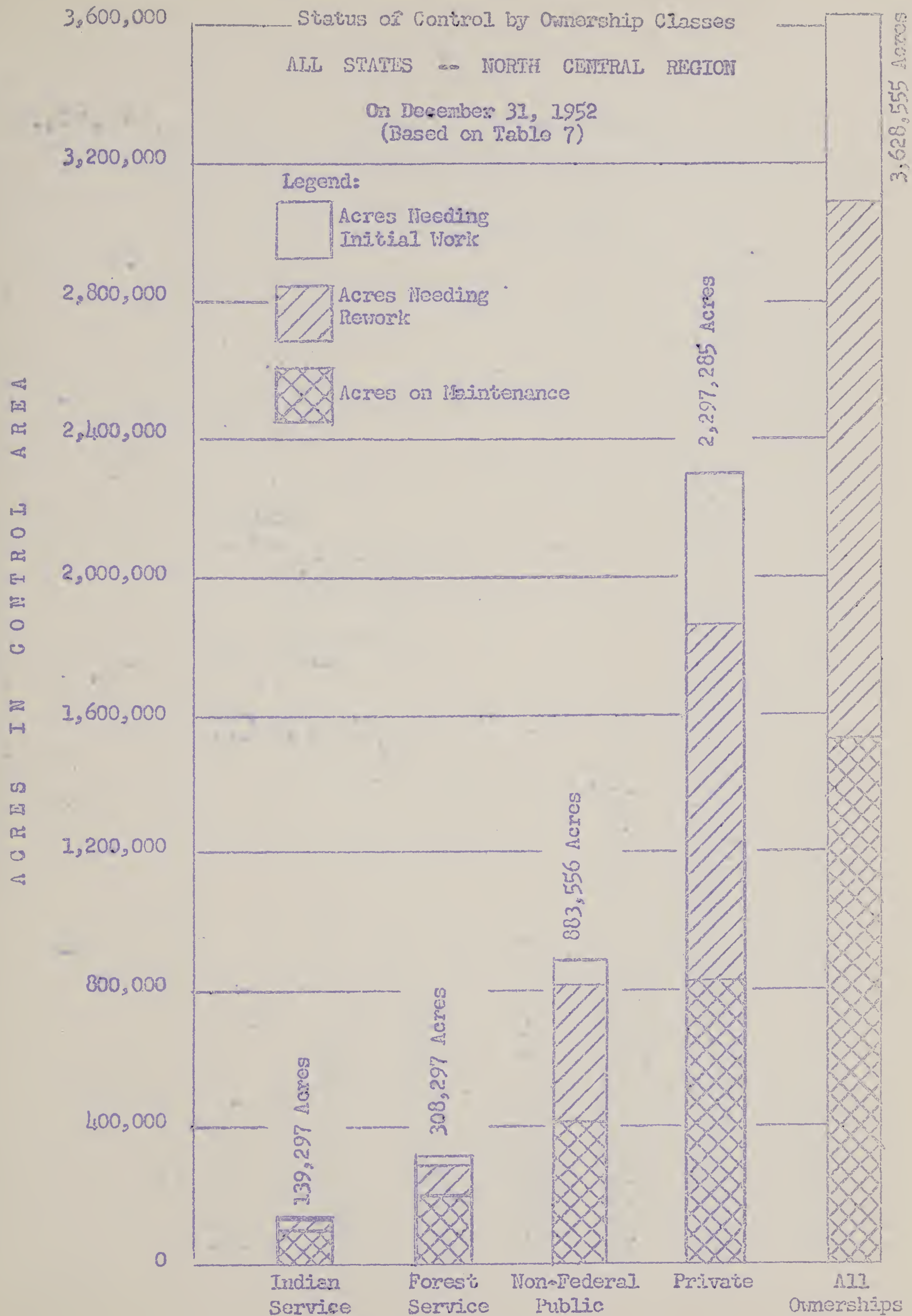
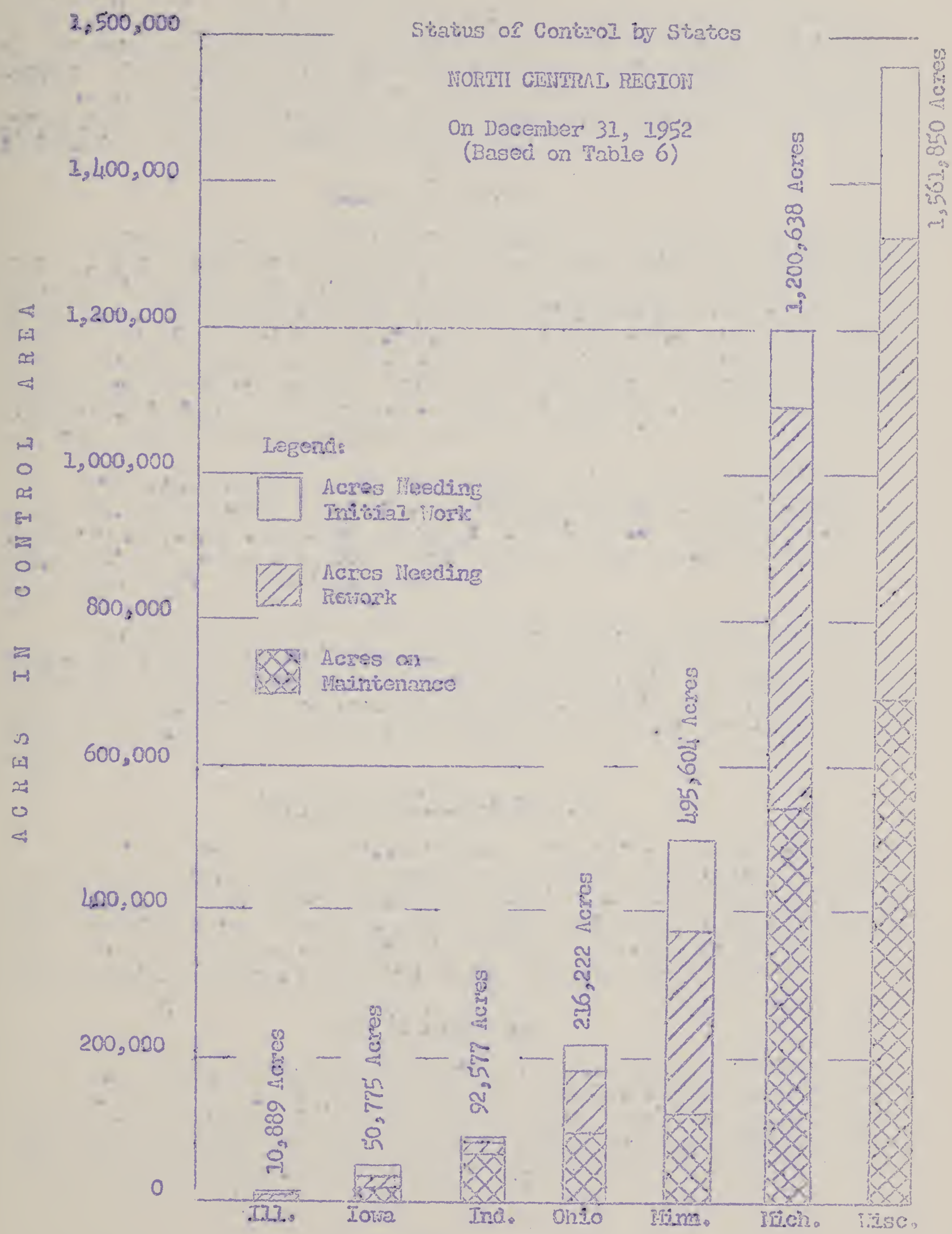

Status of Control by Ownership Classes
ALL STATES -- NORTH CENTRAL REGION
On December 31, 1952
(Based on Table 7)
Legend:
Acres Needing Initial Work
Acres Needing Rework
Acres on Maintenance
ACRES IN CONTROL AREA
3,600,000
3,200,000
2,800,000
2,400,000
2,000,000
1,600,000
1,200,000
800,000
400,000
0
139,297 Acres
308,297 Acres
883,556 Acres
2,297,285 Acres
3,628,555 Acres
Indian Service
Forest Service
Non-Federal Public
Private
All Ownerships

CHART 4


Status of Control by States
NORTH CENTRAL REGION
On December 31, 1952
(Based on Table 6)
ACRES IN CONTROL AREA
1,500,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Legend:
Acres Needing Initial Work
Acres Needing Rework
Acres on Maintenance
10,889 Acres
50,775 Acres
92,577 Acres
216,222 Acres
495,604 Acres
1,200,638 Acres
1,561,850 Acres
Ill.
Iowa
Ind.
Ohio
Minn.
Mich.
Misc.

Checking after eradication showed that work of satisfactory quality had been done on practically all areas. Based on 2,111 acres of strip checked, there was an average of 1.7 ribes bushes with 3.2 feet of live stem per acre found after eradication on 90,273 acres worked and checked. All but 150 acres, or 99.8 percent, of this acreage showed less than the allowable 25 feet of live stem per acre. In addition, 39,904 acres were worked, but not formally checked, because insufficient ribes were found to justify the cost of a formal check (Table 4).

Status of Control

In Tables 6 and 7, the status of control in the Region is given by states and districts and by ownership classes, respectively. The 1,156,065 acres of white pine and 3,628,555 acres of control area of all ownerships at the end of 1952, represent an increase of 28,372 acres of white pine and 47,881 acres of control area over 1951. These increases were in all ownership classes and were composed of additional acres of natural reproduction and planting found on surveys. Over 71,300 additional acres were placed on maintenance in 1952. The largest acreages of additional white pine found and white pine placed on maintenance were in Wisconsin.

The objective of blister rust control is to protect all valuable white pine stands against the disease by establishing and maintaining a condition of ribes suppression on the 3,628,555 acres of control area. To date initial work has been done on 85 percent of the control area, and 42 percent of it is on maintenance.

The program is fairly well on schedule for all classes of public ownership, especially the Indian Service and Forest Service, but lags far behind in private ownership. Of the approximate 2,100,000 acres of initial and rework remaining to be done, nearly 1,500,000 acres are privately owned. Chart 3 is designed to show the status by ownership classes and Chart 4 by states.

Cumulative Ribes Eradication

Table 8 shows the cumulative gross acres worked, ribes destroyed and man-days used since the BRC Program was started in this Region. Considering all workings and all states, over 261 million ribes have been removed from over 5 million acres of control area. Table 8 is simply a record of work done. Many acres shown as initially worked in Table 8, are no longer in the control problem because of logging, fire, plantation failure, etc.

Nursery Sanitation

Nine white pine growing nurseries, 2 Forest Service, 4 State and 3 Private, were worked for ribes in 1952. (See Table 9.) These nurseries contain over 9 million white pine trees for reforestation purposes. Ribes-free zones are being maintained around 43 nurseries in this Region. These nurseries and their environs are checked periodically for ribes.

Control Area Permits

In accordance with Federal Quarantine 63, Michigan, Minnesota, Ohio and Wisconsin are white pine control area states. Ribes cannot be shipped into designated control areas except under a permit issued by the proper State Plant Quarantine Officer. As noted in Table 5, 363 applications for ribes shipping permits were received in 1952, 328 were approved, 16 were rejected, and 19 were voluntarily withdrawn.

CultivatedBlack Currant Elimination

While the cultivated black currant elimination phase of the control program was essentially completed several years ago, a few plantings remained due to the reluctance of owners to give them up. In recent years, Michigan Bureau of Plant Industry Inspectors, in the course of their regular travel, have been picking up these occasional "hold outs". Working in seven counties they visited 23 locations having originally 299 bushes. They found that the owners themselves had voluntarily destroyed 166 bushes at 16 locations and permitted the inspectors to remove 133 bushes from the remaining seven locations.

In Iowa one planting of four bushes was found and destroyed. Table 10 gives the current and cumulative results of cultivated black currant work in this Region.

Canker Pruning

Canker pruning in 1952 was combined with silvicultural pruning in young white pine stands in Upper Michigan and in Wisconsin and some canker pruning was done in Iowa. Only crop trees in protected stands were pruned. Trees with branch cankers were thereby saved and the chances of other pruned trees becoming infected were reduced with the reduction of pine foliage. In Table 12, canker pruning done in 1952 and cumulatively is given.

Chemical Eradication of Ribes

Basal spray of Ribes missouriense, using 2,4,5-T in oil, during the dormant season as a practical ribes eradication was successfully tried in Illinois in 1952. Checking on this work last spring showed apparently complete kill.

In Wisconsin, large masses of R. americanum in the Boscobel Nursery sanitation zone were killed, using 2,4,5-T in water. See Section A of this report for additional data on chemical eradication.

Informational Activities

An important function of the BRC organization is to tell people what blister rust is, the damage it can do, and how it can be controlled. The pine owner is expected to supply the labor to protect his own pine. The informational phase of the program is, therefore, aimed at helping the pine owner help himself. This is accomplished by showing of the two blister rust movies, by newspaper articles, by talks to interested groups and by direct contact with pine owners. Also, a very effective means of informing planters of white pine is a brief statement on blister rust and its control sent out with price lists and planting instructions by nurseries.

Funds

The control program in 1952, as in recent years, was financed from several funds: Federal, State, other Public, and Private.

Bureau W-a funds were used for Leadership, Coordination, and Technical Direction for control work on lands of all ownerships.

Bureau W-e funds were used directly in the field for on-the-ground supervision and some labor, for work on State and Private lands.

U. S. Forest Service funds, which were used by the Bureau to protect white pine on National Forests, were spent chiefly for labor, direct supervision, and transportation.

U. S. Indian Service funds were used almost exclusively for the employment of Indians on Reservations. In addition, the Menominee Tribe contributed a substantial amount toward the employment of its people for ribes eradication on the Menominee Indian Reservation.

The several states provided cash allotments as well as labor and facilities for work on non-federal lands. Counties, municipalities, corporations and private pine owners also provided cash or labor for control work on their lands. Combined, the states and other non-federal cooperators contributed cash and services in the ratio to Bureau (W-e) matching funds of 2-1/3 to 1.

BLISTER RUST CONTROL ON NATIONAL FORESTS

NORTH CENTRAL REGION, 1952

Objective

The objective of blister rust control is to establish and maintain protection against this disease around all valuable white pine stands and forest nurseries administered by the Forest Service. This involves initial and subsequent eradication of ribes bushes within infecting distances of white pine stands to bring such stands to commercial maturity free from appreciable blister rust damage.

Memorandum of Understanding

Under a Memorandum of Understanding, the Forest Service is responsible for selection of white pine areas to be protected, and for payment of labor and supervision to do the necessary control work. Beginning in the spring of 1951, and continuing through 1952, on all forests except the Superior, the Bureau has been responsible for hiring, payrolling and supervising all labor doing ribes eradication. The Bureau pays these men and is later reimbursed from Forest Service funds through 1080 procedure. The Bureau is also responsible for preparing work plans and maps, training labor and supervision, checking on adequacy of work, keeping records, and making necessary reports on all National Forests.

On the Superior National Forest, the Forest Service operated a camp and employed labor direct. However, there was the usual close cooperation between the Forest Service and the Bureau in the training and supervision of labor.

General Status of Control

As may be seen in Text Table 2, there are 144,766 acres of white pine listed for protection in the 308,297 acres of control area on the National Forests in this Region. This is an increase of 5,114 acres of white pine and 7,213 acres of control area shown at the end of 1951. These increases occurred chiefly as new natural pine areas coming in on the Chequamegon and Nicolet, and additional plantings on the Lower Michigan National Forests. For all of the eleven Forests listed, 91.4 percent of the white pine has been initially worked, and 60.0 percent of it is on maintenance. There is practically no control problem on the Wayne and Hoosier Forests where there are very few ribes. Blister rust control is fairly well on schedule on all of the Forests in the Region except the Superior. Initial control has been completed, or nearly so, on all Forests except the Superior, Chippewa and Chequamegon. Practically 60 percent of the remaining initial work on National Forests is on the Superior. A considerable amount of rework is necessary on the Forests in Minnesota, Wisconsin and Upper Michigan. About 104,000 acres of initial and rework is still necessary.

Surveys

The white pine acreage in the Forests of the Region is increasing through natural reproduction and planting. During the year an additional 5,114 acres of pine were mapped.

In mapping pine areas the recently adopted stocked quadrat method of survey is used. This method is superior to the old system, which was based primarily on number of stems per acre, by size classes. The stocked quadrat method takes into account all factors which will have a bearing on the ultimate character and yield of the stand. It stresses ultimate crop trees based on vigor and distribution. Due consideration is given to trees of all commercial species in a stand. Under this method of evaluation an area to be classed as a white pine stand must show promise of producing sufficient white pine to justify the cost of protection from blister rust; that is, an area should show promise of producing at least 5 M board feet of white pine per man-day required for control work.

The adoption of standards expressed in reference tables has materially improved the understanding by all concerned as to what pine areas warrant the cost of protection.

Local Control

In Text Table 1, local control work done in 1952 by Forests and workings is shown. A total of 3,243 acres of white pine was given initial protection. Through surveys, 5,114 acres of white pine were added to the control problem. Hence, at the end of 1952, there were nearly 2,000 more acres of white pine needing initial work than at the end of 1951.

Control work was done in 1952 on seven Forests. There were 107 separate areas worked, 11,780 acres of white pine protected by removing 446,373 ribes from 20,804 acres at a cost of 5,611 man-days. About one quarter of the acreage covered was initial, and three quarters was rework. About 2,500 acres of white pine and 5,000 acres of control area were placed on maintenance in 1952.

Checking

Thorough ribes eradication was done in 1952, as shown by a 3 percent check on 19,700 acres worked. There was an average of 2.0 bushes and 4.6 feet of live stem per acre left after working. This is well below the allowable maximum of 25.0 feet of live stem per acre.

Forest Service Costs, 1952

As shown in Text Table 3, $88,612.14 of Forest Service funds were spent for field operations in blister rust control. Most of these funds ($84,953.17) were spent in ribes eradication, with smaller amounts ($3,658.97) used in canker pruning and surveys. For ribes eradication only, the average regional cost per acre worked was 0.27 man-days, or $4.08.

The effective man-day cost on ribes eradication, derived by dividing the total costs chargeable to ribes eradication by the number of man-days actually spent on ribes eradication, by Forests was as follows:

Forest	Chargeable to Ribes Eradication		Average Cost Per Effective Man-Day
	Man-Days	Cost	
Manistee	80	587.40	7.34
Upper Michigan	756	7,613.11	10.07
Ottawa	1,073	11,581.53	10.79
Chippewa	390	4,895.46	12.27
Chequamegon	1,595	16,485.67	10.34
Nicolet	385	3,420.23	8.88
Sub Total	4,288	44,583.40	10.40
Superior	1,323	40,369.77	30.52
Region Total	5,611	84,953.17	15.14

The average for all National Forests in the Region in 1952 was $15.14. This is considerably higher than the cost of $8.89 in 1951. The increase is due primarily to increased wage rates in 1952 and the high cost of camp operation on the Superior.

Work Plans for Fiscal Year 1954

In accordance with long-time work plans for each Forest, the program for each Forest for Fiscal Year 1954, will include needed work within the limits of funds expected. Specific work plans for Fiscal Year 1954 will be prepared separately. Reference is made to needed work in the discussion of the status on individual Forests which follows:

Status of Control by Forests

A resume' of the status of control on each National Forest on December 31, 1952 follows. More detailed accounts are in the individual reports for each Forest.

Shawnee, Hoosier and Wayne National Forests

No blister rust control has been done or needed in the past few years. Ribes are absent or scarce. All white pine is planted and is now on maintenance. Due to long growing seasons and ample moisture, white pine growth is

excellent. Leader growths of four feet annually are common. White pine yields of 50 M board feet per acre from plantations at 50 years of age have been reported from these southern states.

Lower Michigan National Forest

Huron Unit

No ribes eradication was performed in 1952. Some survey and scouting was performed by the Bureau. Where seed trees are present, white pine is continuing to become established through natural seeding under oak and aspen. One additional area of 40 acres of white pine and 170 acres of control area was added to the control problem. An area of heavy pine infection was found in Alcona County.

The status of control remains practically as at the end of 1951, with 2,533 acres of pine in the control problem. Nearly all of this has been initially worked, and 66 percent is on maintenance.

No local control is planned until the spring of 1954. On the basis of present knowledge, it is planned to work 508 acres, using an estimated 40 man-days. Surveys to be made in the spring of 1953 may increase this work plan.

Manistee Unit

During 1952, 214 acres of white pine were added to the control problem through surveys made by the Bureau on the Cadillac and White Cloud Ranger Districts. On 13 areas in these two Ranger Districts initial and rework was done on 1,575 acres of control area, using 80 man-days paid from Forest Service funds, and costing $587.40. The cost per acre worked was 0.05 man-days, or $0.37. The Chittenden Nursery was reworked in May, using Forest Service funds.

The control problem, primarily of planted pine, was increased to 25,266 acres of pine, and 76,815 acres of control area. All but 797 acres of white pine have been given initial working, and 94 percent is on maintenance.

Present work plans for the spring of 1953 call for working 445 acres, using 21 man-days on the Cadillac District. For the spring of 1954, it is planned to work 2,760 acres, using 75 man-days, on the Baldwin, Cadillac, Manistee and White Cloud Ranger Districts. Contract ribes eradication will be done wherever feasible.

Upper Michigan National Forest

Costs of ribes eradication (Table 3) are not broken down for the Hiawatha and Marquette Units. Total expenditures of Forest Service funds in 1952 were $7,613.11. For both units 4,705 acres were worked, using 756 man-days. The cost per acre worked was 0.16 man-days, or $1.62. All areas planned for work in 1952 were completed, and a high quality of work was done.

Hiawatha Unit

Surveys conducted by Bureau personnel in 1952 added 496 acres of white pine and 640 acres of control area. Ribes eradication was performed on only one area on the Hiawatha Unit. On the Munising District 200 acres of pine were given third working by removing ribes from 410 acres of control area, using 58 man-days.

All but 96 acres of the 13,272 acres of valuable white pine on the Unit have been given initial working, and 64 percent of it is on maintenance. There remain over 1,000 acres of control work to be done, mostly as rework.

No work is planned for the spring of 1953. For Fiscal Year 1954, chiefly in July and August, 1953, it is planned to work 1,365 acres, mostly rework, on the Rapid River District, using 159 man-days.

Marquette Unit

A substantial ribes eradication program was performed in the spring and summer of 1953 on 13 areas in the Raco District. All of it was rework. There were 1,530 acres of pine protected by removing over 49,000 ribes from 4,295 acres of control area, using 698 man-days. A small acreage was added to the maintenance column in 1952.

All of the 11,627 acres of white pine in the control problem have been initially worked. However, only 50 percent is on maintenance. There remain 11,458 acres of control area needing rework.

No funds are available for work in the spring of 1953. For the period July to September, 1953, it is planned to rework 540 acres of control area, all on the Raco District, using 190 man-days.

Ottawa National Forest

In 1952 a considerable amount of post-check survey by Bureau personnel was accomplished. Using the stocked quadrat method of obtaining timber values, 15 previously worked areas on three Ranger Districts were re-examined. Because of excessive eradication costs and losses from blister rust, a net of 484 acres of white pine and 1,157 acres of control area was taken out of the control problem. Much of the white pine on this Forest is in the pole class. Because of heavy soil, and competition from spruce, balsam and hardwoods, pine reproduction is not coming in so generally as on the Upper Michigan National Forest. However, on two areas that were surveyed, abundant white pine reproduction is appearing on the Iron River and Kenton Districts.

A substantial ribes eradication program was conducted on the Iron River, Kenton, Ontonagon, and Watersmeet Districts in the spring and summer of 1952. Because of excessive costs due to rank growth of vegetation, work on some areas was postponed until spring of 1953.

In all, 1,230 acres of pine were protected by removing 60,552 ribes from 2,407 acres of control area, using 1,073 man-days. This work cost $11,581.53 of Forest Service funds. Thus, the average cost per acre worked was 0.45 man-days, or $4.01.

All of the 11,106 acres of white pine in the control problem have been initially worked, and 55 percent is on maintenance. There remain nearly 10,000 acres needing rework to place 5,000 acres of white pine on maintenance.

Planned for the spring of 1953, in the Iron River and Bergland Districts, are 630 acres, chiefly of areas not completed in the summer of 1952, because of dense vegetative growth. This will require 260 man-days. For the period July to December, 1953, it is planned to work 1,455 acres of control area, using an estimated 478 man-days. All of this is rework on the Iron River, Bergland and Ontonagon Districts. Wherever feasible, this work will be done by contract.

Superior National Forest

In 1951 a re-appraisal of white pine stands on this Forest was completed. This resulted in eliminating more than half of the previous acreage in the control problem. Acres dropped included those in the Roadless and No-cut portions, all alienated lands, and other areas where the cost of protection would be high. This does not mean that areas excluded are of small values. It does mean that because of the high cost of control on this Forest, due to heavy ribes conditions, weather favorable to rust development, and inaccessibility, only the very cream of white pine stands, and those which can be managed as such, will be protected.

Early in 1952, a long-time control program was developed cooperatively between the Bureau and the Forest Service. This plan listed, by Ranger Districts and Years, the areas, acres to work, and estimated man-years, necessary to accomplish and maintain control. Work done in 1952 was in conformity with this plan.

Control work in 1952 was performed on 33 areas on the LaCroix, Halfway, Isabella, Tofte, and Kawishiwi Districts. Including both initial and rework, 2,639 acres of white pine were protected by the removal of over 59,000 ribes from 3,653 acres of control area, using 1,323 man-days. About a third more acreage was covered in 1952 than in 1951, at a cost of about half the man-days. This improved production was due partly to fewer ribes per acre, but principally to an improved method of ribes eradication. In 1952, strips approximately three chains wide were pre-strung. To each strip a crew of three men was assigned. They covered the area adequately by zig-zagging. When ribes concentrations were encountered, the crew cleaned it up by working back and forth with much narrower spacing. That satisfactory work resulted is shown by the fact that only 2.2 bushes with 4.3 feet of live stem per acre were found after working. Unlike the work on other Forests in the Region, about one-fifth of the acreage covered was initial work, and over half of the ribes destroyed was in initial work.

A total of $41,869.77 of Forest Service funds was spent in 1952. Of this, $40,369.77 was on actual ribes eradication, and the remaining $1,500.00 on surveys and other field data. Thus, the average cost per acre worked was 0.36 man-days, or $11.05. This was derived by dividing the total costs chargeable to ribes eradication by the man-days actually spent in pulling ribes. Several factors were responsible for this high man-day cost. Increased wage rates was one factor. Operation, repair and maintenance of the camp at Long Lake, over and above the value of board deductions, was another, as shown by the fact that about one-fourth of the costs were non-salary costs. The salary, but not the man-days, of field supervision, was another unavoidable addition to the effective man-day cost.

At the present time, 28,755 acres of white pine are included in the control problem. Approximately 76 percent of this has been initially worked, and 46 percent is on maintenance. The lowest percentage of acres, both initially worked and on maintenance, of all the Forests in the Region, is on the Superior. Over half of all the Regional National Forest acreage needing initial work is on the Superior.

In accordance with the long-time work plan previously described, it is planned to work 5,044 acres, using 2,000 man-days in Calendar Year 1953. This work is scheduled on the Isabella, LaCroix and Tofte Districts.

Chippewa National Forest

A relatively large program of survey and post-check was carried on jointly by Bureau and Forest Service Personnel in 1952. Few areas were added or thrown out. These surveys were valuable in the preparation of a long-time control program.

There was a smaller ribes eradication program in 1952 than in 1951. Including all workings, 1,311 acres of pine in the Bena, Cass Lake, and Walker Districts, were given protection by removing 46,600 ribes from 2,272 acres of control area, using 399 man-days. About a third of the acreage covered, accounting for nearly half of the ribes pulled, was initial work. Checking after eradication showed excellent work performed with an average of 1.0 bush with 1.9 feet of live stem per acre.

Costs to the Forest Service for work in 1952 were $6,518.51, of which $4,895.46 were for ribes eradication, and $1,623.05 for post-checking. Thus, the cost per acre worked was 0.18 man-days, or $2.16.

Of the 13,592 acres of white pine in the control problem, 11,839 acres, or 87 percent, has been initially worked, and 63 percent is on maintenance. There remain nearly 11,000 acres of control area to be worked initially or reworked.

A long-time program has been developed providing for initial working and necessary rework every five years until all areas are on maintenance. The program for spring of 1953 includes post-check work on 10 areas, using 16 man-days, and local control on 1,026 acres, using 268 man-days. For

Fiscal Year 1954, it is proposed to do post-check on 20 areas, using 32 man-days, and local control on 796 acres, using 356 man-days. Some additional work may be listed, as a result of post-check and other surveys. One or two Forest Service Fire Control Aids will continue to devote part of their time to blister rust control in their respective districts.

Chequamegon National Forest

Pre-eradication surveys performed by Bureau Personnel on the Glidden, Hayward, and Medford Districts added 1,225 acres of white pine and 1,765 acres of control area to the control problem. This acreage represents white pine coming in on new areas from existing seed trees. For the past several years such new areas have been added as a result of surveys. In 1952, the Chequamegon had the largest program of control, including 3,492 acres protected, 5,007 acres worked, 210,073 ribes pulled, and 1,595 man-days used, of any of the Forests in the Region. About 60 percent of acreage covered and 75 percent of ribes destroyed were on initial work. Initial work only was done on the Glidden, Hayward, and Medford Districts, and rework only on the Washburn District. Systematic checking after eradication showed that very satisfactory ribes eradication had been accomplished.

Total funds spent by the Forest in 1952 amounted to $16,485.67, nearly all of which were used for labor. The cost per acre worked in 1952 was 0.32 man-days, or $3.29.

Due primarily to natural reproduction, there was an increase of more than 3,600 acres of white pine in the control problem in 1952 over 1951. Of the 25,613 acres of valuable white pine, 23,327 acres, or 91 percent, has been worked initially, and 47 percent is on maintenance. Although good progress was made in 1952, there are actually more acres needing initial work at the end of 1952 than of 1951, because of the new acreage of white pine found in 1952. There are about 20,500 acres of control area still in need of initial or rework before control is accomplished.

Plans for the spring of 1953 call for the working of 1,237 acres, using 536 man-days. For Fiscal Year 1954 it is planned to work 7,578 acres, using 1,180 man-days. This program is scheduled for the Glidden, Hayward, Park Falls and Washburn Districts, with most of it in the last named District. So far as practical, contract ribes eradication will be performed.

Nicolet National Forest

All local control in 1952 was rework performed on the Eagle River, Florence, and Lakewood Districts, with most of the work done on the last named District. To protect 657 acres, mostly planted, 10,476 ribes were removed from 1,185 acres of control area, using 385 man-days. Excellent work was done, as shown by systematic checking after eradication.

The first contract ribes eradication in the Region was successfully done on the Lakewood District by two men using the drag-line method.

Specifications of not leaving more than 10 feet of live stem per acre, or 10 feet of live stem per bush were successfully filled. The job was scheduled for 1953 at an estimated cost of $130.00. The contractors did it for $115.00.

Total costs to the Forest Service for all control work were $3,956.15. Of this, $3,420.23 were for ribes eradication, and $535.92 for canker pruning.

The cost of ribes eradication per acre worked was 0.32 man-days, or $2.89.

In the fall, canker pruning combined with silvicultural pruning, was performed on a plantation worked for the second time earlier in the season. String lines were still intact and were used as guides in pruning. Only potential crop trees, averaging 325 per acre, were pruned. Two experienced men devoted 60 man-days to this work. They gave silvicultural and pathological pruning to 25,630 young trees, of which they removed branch cankers from 2,291. A large percentage of cankers found were young cankers, originating chiefly in 1950, and indicating a heavy wave year in 1950. It is probable that many cankers of 1950 origin, not visible at time of pruning, were also destroyed.

The white pine in the control problem, 12,469 acres, is 500 acres larger than at the end of 1951, due to increases from natural reproduction. Of the 12,469 acres of white pine, 11,934 acres, or 96 percent, have been initially worked, and 54 percent is on maintenance. There remain about 10,000 acres needing initial or rework.

Plans for the spring of 1953 call for working 1,500 acres, using 480 man-days, and for the Fiscal Year 1954 working 1,100 acres, using 365 man-days.

Text Table 1. Local Control on National Forests, North Central Region, Calendar Year 1952

(All work performed by Forest Service)

National Forest	Number of Areas	Acres White Pine Protected	Acres Control Area Worked	Ribes Bushes Destroyed	Man-Days Used
Initial Working					
Manistee N.F. Mich.	5	214	655	5	1
Superior N.F. Minn.	7	525	784	31,057	401
Chippewa N.F. Minn.	6	390	718	22,108	114
Chequamegon N.F. Wis.	14	2,114	3,129	174,369	1,186
Total, Initial	32	3,243	5,286	227,539	1,702
Second Working					
Marquette N.F. Mich.	2	392	1,180	17,005	117
Ottawa N.F. Mich.	4	272	547	15,838	191
Superior N.F. Minn.	10	699	1,023	6,514	414
Chippewa N.F. Minn.	3	122	421	2,879	26
Nicolet N.F. Wis.	1	7	50	342	11
Total, Second	20	1,492	3,221	42,578	759
Third and Other Workings					
Manistee N.F. Mich.	8	507	920	7,429	79
Marquette N.F. Mich.	11	1,138	3,115	32,282	581
Hiawatha N.F. Mich.	1	200	410	2,811	58
Ottawa N.F. Mich.	8	958	1,860	44,714	882
Superior N.F. Minn.	16	1,415	1,846	21,575	508
Chippewa N.F. Minn.	7	799	1,133	21,607	259
Chequamegon N.F. Wis.	1	1,378	1,878	35,704	409
Nicolet N.F. Wis.	3	650	1,135	10,134	374
Total, Third and Other	55	7,045	12,297	176,256	3,150
All Workings					
Manistee N.F. Mich.	13	721	1,575	7,434	80
Marquette N.F. Mich.	13	1,530	4,295	49,287	698
Hiawatha N.F. Mich.	1	200	410	2,811	58
Ottawa N.F. Mich.	12	1,230	2,407	60,552	1,073
Superior N.F. Minn.	33	2,639	3,653	59,146	1,323
Chippewa N.F. Minn.	16	1,311	2,272	46,594	399
Chequamegon N.F. Wis.	15	3,492	5,007	210,073	1,595
Nicolet N.F. Wis.	4	657	1,185	10,476	385
Total, All Workings	107	11,780	20,804	446,373	5,611

Text Table 2. Status of Control on National Forests, North Central Region, on December 31, 1952

National Forest	Control Problem, Acres		Initially Worked, Acres		On Maintenance Acres		Needing Work, Acres			
							Initial Work		Re-Work	
	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Hoosier, Indiana	18	179	18	179	18	179	0	0	0	0
Wayne, Ohio	515	4,029	515	4,029	515	4,029	0	0	0	0
Huron, Michigan	2,533	7,841	2,478	7,641	1,681	5,886	55	200	797	1,755
Manistee, Michigan	25,266	76,815	24,469	75,175	23,834	73,130	797	1,640	635	2,045
Hiawatha, Michigan	13,272	35,701	13,176	35,461	8,540	25,491	96	240	4,636	9,970
Marquette, Michigan	11,627	25,570	11,627	25,570	5,859	14,112	0	0	5,768	11,458
Ottawa, Michigan	11,106	21,416	11,106	21,416	6,098	11,530	0	0	5,008	9,886
Superior, Minnesota	28,755	43,683	21,864	28,863	13,088	18,011	6,891	14,820	8,776	10,852
Chippewa, Minnesota	13,592	26,509	11,839	22,932	8,521	15,568	1,753	3,577	3,318	7,364
Chequamegon, Wisconsin	25,613	42,313	23,327	38,888	12,063	21,838	2,286	3,425	11,264	17,050
Nicolet, Wisconsin	12,469	24,241	11,934	23,331	6,701	14,260	535	910	5,233	9,071
Total	144,766	308,297	132,353	283,485	86,918	204,034	12,413	24,812	45,435	79,451

Text Table 3. Forest Service Funds Spent on Blister Rust Control, North Central Region, Calendar Year 1952

National Forest	Jan.-June, 1952	July-Dec., 1952	Calendar Year 1952
Manistee N.F.	$ 587.40	$ 0	$ 587.40
Upper Mich. N.F.	3,047.50	4,565.61	7,613.11
Ottawa N.F.	4,262.34	7,319.19	11,581.53
Superior N.F.	19,945.32	21,924.45	41,869.77
Chippewa N.F.	3,758.52	2,759.99	6,518.51
Chequamegon N.F.	2,490.13	13,995.54	16,485.67
Nicolet N.F.	3,155.61	800.54	3,956.15
Totals	$ 37,246.82	$ 51,365.32	$ 88,612.14

BLISTER RUST CONTROL ON INDIAN RESERVATIONS, 1952

NORTH CENTRAL REGION FINANCIAL PROJECT BLR-7

Objective

The objective is to establish and maintain blister rust protection around all valuable white pine stands administered by the Indian Service. This involves initial and subsequent eradication of ribes bushes within infecting distances of white pine stands to bring such stands to commercial maturity free from appreciable blister rust damage.

Memorandum of Understanding

Under a Memorandum of Understanding, the Indian Service is responsible for the selection of white pine areas to be protected, and the employment of labor and supervision. The Bureau of Entomology and Plant Quarantine is responsible for preparing work plans and maps, training of labor and supervision, checking on adequacy of control work, keeping records, and making periodic reports of work done.

General Status of Control

As may be seen in Text Table 5, control is being established and maintained around nearly 83,000 acres of white pine on 11 Reservations. During 1952, 3,038 acres of white pine, chiefly as natural reproduction on the Reservations in Wisconsin, were added to the control problem. Control work on Indian Service white pine stands is up-to-date. In spite of the fact that disease conditions on the Reservations are generally favorable for the spread of the rust, timely control work has prevented serious damage.

As shown in Text Table 5, over 97 percent of white pine has been worked initially, and over 73 percent is on maintenance. Most of the initial work remaining consists of areas of newly established natural reproduction. Initial working of 4,033 acres and rework of 35,321 acres are scheduled for future years.

Current Work, 1952

In Text Table 4, control work done in 1952 on 8 of the Reservations is shown. Of the 15,882 acres worked, about one-third was initial and two-thirds was necessary rework. As a result of post checks and eradication work in 1952, there were 7,572 acres of white pine placed on maintenance. All work done in 1952 was in accordance with a long-time control program for each Reservation developed jointly between members of the Indian Service and the Blister Rust Organization.

On the basis of a 2 percent check for ribes after eradication, all of the acreage was satisfactorily worked and checked as having less than 25 feet of live stem per acre.

Expenditures in 1952

Expenditures for ribes eradication on Indian lands during Calendar Year 1952 are shown in Text Table 6. These costs are exclusive of assistance given by employees of the Bureau of Entomology and Plant Quarantine. The cost per effective man-day, based on 4,165 man-days used on ribes eradication (Text Table 4) was $9.78.

Status of Control by Reservations

A brief discussion of blister rust control on each Reservation follows. See separate reports for each Reservation for more detail.

Sac-Fox Reservation - Iowa

This Reservation has 50 acres of fast growing planted pine with a control area of 500 acres. All of it was initially worked in the middle 30's, partially reworked in 1944, and completely reworked in 1951 and 1952. Nearly 4,000 ribes were removed in 1952 from 94 acres.

Grand Portage Reservation - Minnesota

This Reservation, located in the northeastern tip of Minnesota, has 1,097 acres of white pine with 1,503 acres of control area. All but 123 acres of pine and 209 acres of control area have been initially worked and the necessary rework has been done when due. Local control here is the most expensive of any of the Reservations. Ribes are very abundant, particularly in the numerous narrow valleys which cut across the white pine areas. Pine infection is extremely severe on the adjacent Canadian side and on other unprotected pine areas. In the protected areas, however, rust is not severe. This is good proof of the effectiveness of control work done so far.

In 1952, rework was done on 56 acres, from which 40,174 ribes were removed. None of the white pine has been placed on maintenance because ribes have not been suppressed to a sufficient degree.

Leech Lake Indian Reservation - Minnesota

The 2,477 acres of white pine, listed in the control area of 3,469 acres, lie entirely in that portion of the Reservation known as the "Onigum Unit", on a large peninsula extending into Leech Lake. Part of this acreage is owned by the U. S. Forest Service. Most of the white pine, approximately 80 percent, is on maintenance. The white pine stand on the Leech Lake Reservation is one of the best stocked stands owned by the Indian Service in this Region. In 1952, initial work was done on 82 acres and rework on 80 acres. A total of 3,470 ribes was destroyed.

Nett Lake Indian Reservation - Minnesota

This Reservation has 5,212 acres of white pine in its control area of 7,079 acres. All of this acreage has been initially worked and nearly 92 percent of it is on maintenance. Pine infection is scattered lightly throughout the protected pine and is quite heavy in unprotected white pine stands.

Vermilion Indian Reservation - Minnesota

The control problem on this Reservation consists of 78 acres of natural pine and 186 of control area. Following the fifth working in 1949, the entire acreage was placed on maintenance. Only a very small amount of rust can be found on the pine. This again brings out the effectiveness of control since the area originally had a very heavy ribes population and is located where climatic conditions are very favorable for the spread of the rust.

White Earth Indian Reservation - Minnesota

The blister rust control problem here consists of 502 acres of white pine included in a control area of 1,056 acres. Initial and rework have kept blister rust infection to a minimum. The last ribes eradication was done in 1947. Over half of the area is nowon maintenance.

Red Lake Indian Reservation - Minnesota

The Red Lake Indian Reservation has 12,604 acres of white pine in its control problem of 19,143 acres. This is over half the total white pine acreage of all of the Indian reservations in Minnesota. The main body of white pine occurs on Ponemah Point. Rust conditions are not severe. Ribes abundance varies from very heavy in the swamps, to light in the sandy, upland soils. Logging in the area has stimulated ribes regeneration making rework necessary. Considering the ribes concentration and the climatic conditions favorable for the spread of the rust, the light infection indicates that control measures to date have been both timely and effective. All of the white pine has been initially worked and approximately 77 percent is on maintenance.

Extensive logging of mature red and white pine on this Reservation has disturbed ribes conditions to the extent that surveys are necessary before an intelligent rework program can be prepared on these cut-over areas. In 1952, a combination post-check and ribes eradication crew of four men covered 1,984 acres from which they removed 1,205 ribes.

Work plans for 1953 include post-checking twelve areas and local control on five areas. The post-check work will be carried on from May through September and will involve going over 6,348 acres of control area at an estimated expenditure of 84 man-days. Local control work on the five areas is planned for May and June, 1953, when 387 acres are to be cleared of ribes at an estimated cost of 190 man-days.

Bad River Indian Reservation - Wisconsin

The Bad River Reservation has 8,547 acres of white pine with a control area of 15,023 acres. Over 95 percent is on maintenance. In 1952, local control was performed by three five-man crews. They worked four areas which totalled 636 acres of pine and 962 acres of control area from which they removed 145,124 ribes.

Plans for 1953 call for working 592 acres of control area at an estimated cost of 385 man-days.

Lac Court Oreilles Indian Reservation - Wisconsin

The Lac Court Oreilles Reservation has 14,174 acres of white pine with a control area of 25,485 acres. White pine is on the increase through natural reproduction. This Reservation has a considerable acreage which is adapted to white pine which no doubt will continue to fill in as more trees reach seed-bearing age. Another 222 acres of pine were added to the inventory this year. Over 98 percent of the white pine on this Reservation has been initially worked and about 65 percent is on maintenance. The remaining initial work consists primarily of newly found young white pine stands.

Three six-man crews were employed during most of the eradication season. Eight separate areas, totalling 1,608 acres of white pine, were protected during 1952 by working 2,938 acres of control zone and destroying 22,179 ribes. About one-third was initial work and two-thirds rework.

Plans for 1953 call for working 4,581 acres of control area at an estimated cost of 875 man-days.

Lac du Flambeau Indian Reservation - Wisconsin

The Lac du Flambeau Reservation, like the Lac Court Oreilles, has some very good white pine sites that are steadily increasing as new reproduction comes in. During the past year the net pine inventory increased by 1,958 acres. The Reservation now has 14,411 acres of white pine in 26,001 acres of control zone. The present status of control is: 99 percent of the white pine has been initially worked and 91 percent is on maintenance.

During 1952 a four-man crew protected 18 areas having 4,267 acres of white pine. They cleared 6,095 acres of 42,043 ribes.

Plans for 1953 call for working 1,031 acres of control area at an estimated cost of 180 man-days.

Menominee Indian Reservation - Wisconsin

The Menominee contains the largest amount of white pine of all the reservations in this Region. The pine is of all age classes ranging from large saw timber to reproduction which continues to come in on favorable white pine sites. Most of the increase is taking place on the lighter soil types east of the Wolf River where reproduction is becoming established under oak, red pine and jack pine.

The total control problem involves 23,765 acres of white pine and 39,852 acres of control area. Surveys in 1952 brought in an increase of 868 acres due to new acreage restocking to white pine. Besides the acreage in the existing control problem, there is an estimated additional 10,000 acres occupied largely by mature stands of white pine with an estimated volume in excess of 100,000,000 board feet. This acreage will probably not continue in white pine after cutting but will go into hardwoods. If, however, satisfactory white pine reproduction does occur after logging, such acreage will be included in the control problem.

At the end of 1952, a little over 92 percent of the white pine acreage in the control problem had been initially worked and 54 percent was on maintenance.

Rust conditions are very heavy in unprotected stands in the vicinity. However, due to effective and timely ribes eradication, the rust has been prevented from doing serious damage on the Reservation. Blister rust is certainly a necessary part of a long-time sustained yield management plan for white pine on this Reservation.

Eradication work was started on May 1, just as ribes leaves were beginning to appear, and continued until June 30. It was the first time in a decade that control operations were terminated for the season at the end of the fiscal year. This was done in accordance with the approved work plan prepared in 1950.

Five crews of Indian women were employed. Each crew averaged four in line and a crew leader behind the line. Field operations were supervised by Indian Service personnel. Technical assistance, in the form of surveys, training, checking and record keeping, was provided by the Bureau of Entomology and Plant Quarantine through the Blister Rust Control District Leader. A total of 1,910 acres of white pine was protected by working 3,280 acres of control area from which 44,358 ribes were destroyed at a cost of 966 man-days. About one-quarter was initial work and three-quarters was rework.

In 1950, a 10-year work plan was prepared to place on maintenance all white pine stands on the Menominee. The proposed plan for 1953 is in keeping with this 10-year work plan except that the addition of about 1,000 acres of additional white pine reproduction, mapped during the past year, had to be included in the over-all plan. Much of this acreage appears to be ribes-free so the inclusion of this additional work will not materially affect the schedule. It is proposed to do as much work as possible during the period May and June. For the Calendar Year 1953, it is planned to do rework on 2,045 acres of control area to protect 1,215 acres of white pine at an estimated cost of 880 man-days.

Text Table 4. Local Control on Indian Reservations, North Central Region, Calendar Year 1952

(All work performed on Indian Service Funds)

Indian Reservation	Number of Areas	Acres of White Pine Protected	Acres of Control Area Worked	Ribes Bushes Destroyed	Man-Days Used
Initial Working					
Leech Lake, Minn.	1	45	82	1,746	31
Lac Court Oreilles, Wis.	4	509	964	6,636	370
Lac du Flambeau, Wis.	13	1,725	2,933	28,360	171
Menominee, Wis.	3	415	900	9,432	138
Total, Initial	21	2,694	4,879	46,174	710
Second Working					
Sac-Fox, Iowa	1	-	44	2,207	21
Bad River, Wis.	1	44	76	56,879	183
Lac Court Oreilles, Wis.	4	1,099	1,974	15,613	927
Lac du Flambeau, Wis.	5	2,542	3,473	13,683	174
Menominee, Wis.	4	1,495	2,380	34,926	828
Total, Second	15	5,180	7,947	123,308	2,133
Third and Other Workings					
Sac-Fox, Iowa	1	15	50	1,720	18
Leech Lake, Minn.	1	80	80	1,724	32
Grand Portage, Minn.	1	41	56	40,174	267
Red Lake, Minn.	5	1,776	1,984	1,205	108
Bad River, Wis.	3	592	886	88,245	897
Total, Third and Other	11	2,504	3,056	133,068	1,322
All Workings					
Sac-Fox, Iowa	2	15	94	3,927	39
Leech Lake, Minn.	2	125	162	3,470	63
Grand Portage, Minn.	1	41	56	40,174	267
Red Lake, Minn.	5	1,776	1,984	1,205	108
Bad River, Wis.	4	636	962	145,124	1,080
Lac Court Oreilles, Wis.	8	1,608	2,938	22,249	1,297
Lac du Flambeau, Wis.	18	4,267	6,406	42,043	345
Menominee, Wis.	7	1,910	3,280	44,358	966
Total, All Workings	47	10,378	15,882	302,550	4,165

Text Table 5. Status of Control on Indian Reservations, North Central Region, on December 31, 1952

Indian Reservation	Control Problem, Acres		Initially Worked, Acres		On Maintenance Acres		Needing Work, Acres			
							Initial Work		Re-Work	
	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Sac-Fox, Iowa	50	500	50	500	10	206	0	0	40	294
Grand Portage, Minnesota	1,097	1,503	974	1,294	0	0	123	209	974	1,294
Vermilion, Minnesota	78	186	78	186	78	186	0	0	0	0
Nett Lake, Minnesota	5,212	7,079	5,212	7,079	4,770	6,238	0	0	442	841
Leech Lake, Minnesota	2,477	3,469	2,477	3,469	2,076	2,755	0	0	401	714
White Earth, Minnesota	502	1,056	502	1,056	231	545	0	0	271	511
Red Lake, Minnesota	12,604	19,143	12,604	19,143	10,460	14,789	0	0	2,144	4,354
Bad River, Wisconsin	8,547	15,023	8,451	14,846	8,146	13,519	96	177	305	1,327
Lac Court Oreilles, Wisconsin	14,174	25,485	13,974	25,135	9,151	16,617	200	350	4,823	8,518
Lac du Flambeau, Wisconsin	14,411	26,001	14,371	25,909	13,104	24,108	40	92	1,267	1,801
Menominee, Wisconsin	23,765	39,852	21,982	36,647	12,838	20,980	1,783	3,205	9,144	15,667
Total	82,917	139,297	80,675	135,264	60,864	99,943	2,242	4,033	19,811	35,321

Text Table 6. Indian Service and Tribal Funds Spent on Blister Rust Control, North Central Region, Calendar Year 1952.

Indian Agency	Jan.-June, 1952	July-Dec., 1952	Calendar Year 1952
Sac-Fox, Iowa	$ 119.00	$	$ 119.00
Consolidated Chippewa	2,204.00	934.62	3,138.62
Red Lake, Minnesota	895.00	2,621.00	3,516.00
Great Lakes Agency	13,656.12	12,951.00	26,607.12
Menominee, Wisconsin	7,352.22*	0	7,352.22*
Total	$ 24,226.34*	$ 16,506.62	$ 40,732.96*

* Includes $519.53 of Menominee Tribal Funds.

Table 1. Surveys Performed in North Central Region, Calendar Year, 1952

State	Type of Survey	Acres Previously Mapped		Acreage Increase		Acreage Decrease		Total Acres Mapped, Net		Man-Days Used
		White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	
Illinois	Pre-eradication	-	-	58	293	-	-	58	293	5
	Re-Survey	48	1,422	4	10	34	1,342	18	90	10
	Post-Check	22	307	-	-	22	307	-	-	[illegible]
	Total	70	1,729	62	303	56	1,649	76	383	[illegible]
Indiana	Pre-eradication	-	-	313	2,080	-	-	313	2,080	13
	Re-Survey	25	280	-	-	24	240	1	40	4
	Post-Check	499	3,385	32	30	32	1,364	499	2,051	20
	Total	524	3,665	345	2,110	56	1,604	813	4,171	37
Iowa	Pre-eradication	-	-	34	126	-	-	34	126	3
	Re-Survey	1	5	2	-	-	-	3	5	[illegible]
	Post-Check	105	760	-	-	-	-	105	760	5
	Total	106	765	36	126	-	-	142	891	[illegible]
Ohio	Pre-eradication	-	-	675	2,996	-	-	675	2,996	13
	Re-Survey	235	1,095	85	246	7	199	313	1,142	[illegible]
	Post-Check	811	4,361	117	250	12	927	916	3,684	20
	Total	1,046	5,456	877	3,492	19	1,126	1,904	7,822	[illegible]
Michigan	Pre-eradication	-	-	3,512	9,047	-	-	3,512	9,047	[illegible]
	Re-Survey	619	2,534	534	984	74	724	1,079	2,794	[illegible]
	Post-Check	11,044	28,060	4,309	5,420	1,672	5,562	13,681	27,918	[illegible]
	Total	11,663	30,594	8,355	15,451	1,746	6,286	18,272	39,759	[illegible]
Minnesota	Pre-eradication	-	-	385	1,367	-	-	385	1,367	[illegible]
	Re-Survey	600	1,619	101	134	97	350	604	1,403	[illegible]
	Post-Check	8,903	18,818	143	231	882	1,995	8,164	17,054	[illegible]
	Total	9,503	20,437	629	1,732	979	2,345	9,153	19,824	[illegible]
Wisconsin	Pre-eradication	-	-	14,754	41,686	-	-	14,754	41,686	[illegible]
	Post-Check	12,009	26,581	5,600	8,179	356	1,572	17,253	33,188	165
	Total	12,009	26,581	20,354	49,865	356	1,572	32,007	74,874	[illegible]
Region	Pre-eradication	-	-	19,731	57,595	-	-	19,731	57,595	235
	Re-Survey	1,528	6,955	726	1,374	236	2,855	2,018	5,474	53
	Post-Check	33,393	82,272	10,201	14,110	2,976	11,727	40,618	84,655	[illegible]
	Total	34,921	89,227	30,658	73,079	3,212	14,582	62,367	147,724	[illegible]

Table 2. Summary of Local Control by States and Operating Agencies
North Central Region, Calendar Year 1952.

te	Operating Agency	Number Areas Worked	Acres White Pine Protected	Acres Worked	Ribes Destroyed	8-Hour Man-Days Used
			Initial Working			
inois	Bureau-State	6	72	338	19,451	38
iana	Bureau-State	40	310	2,085	47	[illegible]
a	Bureau-State	6	41	130	17,762	[illegible]
o	Bureau-State	29	524	2,340	5,157	[illegible]
higan	Bureau-State	56	3,680	9,475	43,077	355
	Forest Service	5	214	655	5	1
	Total	61	3,894	10,130	43,082	356
nesota	Bureau-State	5	355	703	33,486	365
	Forest Service	13	915	1,502	53,165	515
	Indian Service	1	45	82	1,746	31
	Total	19	1,315	2,287	88,397	911
consin	Bureau-State	55	13,493	38,531	279,635	1,792
	Forest Service	14	2,114	3,129	174,369	1,186
	Indian Service	20	2,649	4,797	44,428	679
	Total	89	18,256	46,457	498,432	3,657
ion	Bureau-State	197	18,475	53,802	398,615	2,675
	Forest Service	32	3,243	5,286	227,539	1,702
	Indian Service	21	2,694	4,879	46,174	710
	Total Initial	250	24,412	63,967	672,328	5,087
			Second Working			
iana	Bureau-State	4	75	251	105	4
a	Bureau-State	1	15	100	9,462	53
	Indian Service	1	-	44	2,207	21
	Total	2	15	144	11,669	74
o	Bureau-State	13	227	1,062	125	6
higan	Bureau-State	34	5,330	12,250	50,426	763
	Forest Service	6	664	1,727	32,843	308
	Total	40	5,994	13,977	83,269	1,071
nesota	Bureau-State	1	100	122	25,178	71
	Forest Service	13	821	1,444	9,393	440
	Total	14	921	1,566	34,571	511
consin	Bureau-State	29	2,956	9,048	35,410	444
	Forest Service	1	7	50	342	11
	Indian Service	14	5,180	7,903	121,101	2,112
	Total	44	8,143	17,001	156,853	2,567
ion	Bureau-State	81	8,703	22,831	120,706	1,340
	Forest Service	20	1,492	3,221	42,578	759
	Indian Service	15	5,180	7,947	123,308	2,133
	Total Second	116	15,375	33,999	286,592	4,233

(Cont'd.)

Table 2.(Cont'd.) Summary of Local Control by States and Operating Agencies
North Central Region, Calendar Year 1952.

e	Operating Agency	Number Areas Worked	Acres White Pine Protected	Acres Worked	Ribes Destroyed	8-Hour Man-Days Used
	Third and Subsequent Workings					
nois	Bureau-State	1	36	64	2,925	12
ana	Bureau-State	8	378	1,531	30	4
	Bureau-State	3	60	164	9,028	58
	Indian Service	1	15	50	1,720	18
	Total	4	75	214	10,748	76
	Bureau-State	17	788	2,636	4,334	58
igan	Bureau-State	22	5,733	12,409	68,190	863
	Forest Service	28	2,803	6,305	87,236	1,600
	Total	50	8,536	18,714	155,426	2,463
esota	Bureau-State	2	42	54	161	18
	Forest Service	23	2,214	2,979	43,182	767
	Indian Service	7	1,897	2,120	43,103	407
	Total	32	4,153	5,153	86,446	1,192
onsin	Forest Service	4	2,028	3,013	45,838	783
	Indian Service	3	592	886	88,245	897
	Total	7	2,620	3,899	134,083	1,680
gon	Bureau-State	53	7,031	16,858	84,670	1,013
	Forest Service	55	7,045	12,297	176,256	3,150
	Indian Service	11	2,504	3,056	133,068	1,322
	Total Third	119	16,580	32,211	393,994	5,485
	All Workings					
lnois	Bureau-State	7	102	402	22,376	30
ana	Bureau-State	52	763	3,867	182	29
	Bureau-State	10	116	394	36,252	188
	Indian Service	2	15	94	3,927	39
	Total	12	131	488	40,179	227
	Bureau-State	58	1,539	6,236	9,618	110
igan	Bureau-State	112	14,743	34,134	161,693	1,982
	Forest Service	39	3,681	8,687	120,084	1,909
	Total	151	18,424	42,821	281,777	3,891
nesota	Bureau-State	8	497	879	58,825	454
	Forest Service	49	3,950	5,925	105,740	1,722
	Indian Service	8	1,942	2,202	44,849	438
	Total	65	6,389	9,006	209,414	2,614
onsin	Bureau-State	84	16,449	47,579	315,045	2,236
	Forest Service	19	4,149	6,192	220,549	1,980
	Indian Service	37	8,421	13,586	253,774	3,688
	Total	140	29,019	67,357	789,368	7,904
gon	Bureau-State	331	34,209	93,491	603,991	5,029
	Forest Service	107	11,780	20,804	446,373	5,611
	Indian Service	47	10,378	15,882	302,550	4,165
	Total, All Workings	485	56,367	130,177	1,352,914	14,805

Table 3. Summary of Acres of White Pine Protected and Acres Worked
By States, Ownership Classes and Workings
North Central Region, Calendar Year 1952

State	Ownership Class	Initial Working, Acres		Second Working, Acres		Other Workings, Acres		All Workings, Acres	
		White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Illinois	Private	18	47	-	-	30	64	48	111
	Non-Fed. Public	54	291	-	-	-	-	54	291
	Total	72	338	-	-	30	64	102	402
Indiana	Private	310	2,085	37	151	53	584	400	2,820
	Non-Fed. Public	-	-	38	100	325	947	363	1,047
	Total	310	2,085	75	251	378	1,531	763	3,867
Iowa	Private	41	130	-	-	5	10	46	140
	Non-Fed. Public	-	-	15	100	55	154	70	254
	Indian Service	-	-	-	44	15	50	15	94
	Total	41	130	15	144	75	214	131	488
Ohio	Private	277	1,692	227	1,060	322	1,621	826	4,373
	Non-Fed. Public	247	848	-	-	466	1,015	713	1,863
	Total	524	2,540	227	1,060	788	2,636	1,539	6,236
Michigan	Private	1,639	4,563	3,539	7,288	1,995	5,299	7,173	17,150
	Non-Fed. Public	2,041	4,912	1,791	4,962	3,738	7,110	7,570	16,984
	Forest Service	214	655	664	1,727	2,803	6,305	3,681	8,687
	Total	3,894	10,130	5,994	13,977	8,536	18,714	18,424	42,821
Minnesota	Private	130	269	100	122	42	54	272	445
	Non-Fed. Public	225	434	-	-	-	-	225	434
	Forest Service	915	1,502	821	1,444	2,214	2,979	3,950	5,925
	Indian Service	45	82	-	-	1,897	2,120	1,942	2,202
	Total	1,315	2,287	921	1,566	4,153	5,153	6,389	9,006
Wisconsin	Private	6,444	12,965	1,887	6,881	-	-	8,331	19,846
	Non-Fed. Public	7,049	25,566	1,069	2,167	-	-	8,118	27,733
	Forest Service	2,114	3,129	7	50	2,028	3,013	4,149	6,192
	Indian Service	2,649	4,797	5,180	7,903	592	886	8,421	13,586
	Total	18,256	46,457	8,143	17,001	2,620	3,899	29,019	67,357
Region	Private	8,859	21,751	5,790	15,502	2,447	7,632	17,096	44,885
	Non-Fed. Public	9,616	32,051	2,913	7,329	4,584	9,226	17,113	48,606
	Forest Service	3,243	5,286	1,492	3,221	7,045	12,297	11,780	20,804
	Indian Service	2,694	4,879	5,180	7,947	2,504	3,056	10,378	15,882
	Total	24,412	63,967	15,375	33,999	16,580	32,212	56,367	130,177

Table 4. Results of Checking After Ribes Eradication by States and Ownership Classes, North Central Region, Calendar Year 1952.

State	Ownership Class	Acres Worked and Checked	Strip Acres	Ribes Found		Ribes per Acre		Classification of Worked Areas on Basis of Ribes F.L.S. per acre after Eradication		
				Bushes	F.L.S.	Bushes	F.L.S.	0.0-15.0 F.L.S. (Acres)	15.1-25.0 F.L.S. (Acres)	Over 25 F.L.S. (Acres)
Illinois	State-Private	402	10.00	20	126.4	2.0	12.6	216	96	90
Iowa	State-Private	384	29.00	155	321.0	5.3	11.1	370	14	-
	Indian Service	100	5.00	14	34.0	2.8	6.8	100	-	-
	Total	484	34.00	169	355.0	5.0	10.4	470	14	-
Ohio	State-Private	3,049	35.90	152	426.0	4.2	11.9	1,714	1,335	-
Michigan	State-Private	33,844	555.00	880	682.4	1.6	1.2	33,844	-	-
	Forest Service	8,572	254.30	375	855.5	1.5	3.4	8,572	-	-
	Total	42,416	809.30	1,255	1,537.9	1.6	1.9	42,416		-
Minnesota	State-Private	694	26.26	29	108.0	1.1	4.1	694	-	-
	Forest Service	5,414	192.00	298	572.7	1.6	3.0	5,411	3	-
	Indian Service	218	8.60	27	38.5	3.1	4.5	218	-	-
	Total	6,326	226.86	354	719.2	1.6	3.2	6,323	3	-
Wisconsin	State-Private	18,292	576.60	654	1,440.2	1.1	2.5	17,927	365	-
	Forest Service	5,718	152.40	505	1,349.0	3.3	8.9	4,706	1,012	-
	Indian Service	13,586	266.20	452	742.0	1.7	2.8	13,450	76	60
	Total	37,596	995.20	1,611	3,531.2	1.6	3.5	36,083	1,453	60
Region	State-Private	56,665	1,232.76	1,890	3,104.0	1.5	2.5	54,765	1,810	90
	Forest Service	19,704	598.70	1,178	2,777.2	2.0	4.6	18,689	1,015	-
	Indian Service	13,904	279.80	493	814.5	1.8	2.9	13,768	76	60
	Grand Total	90,273	2,111.26	3,561	6,695.7	1.7	3.2	87,222	2,901	150

Note: There were 130,177 acres worked in 1952. Of this, 90,273 acres were formally checked, and 39,904 acres not formally checked. Practically all of the unchecked acres were scoutable areas, not containing enough ribes originally to justify the cost of a formal check. None of the 3,856 acres worked in Indiana was checked for this reason.

Table 5. Control Area Permits, North Central Region, Calendar Year 1952.

State	Number of Applications Received	Number of Permits Approved	Number of Applications Rejected	Number of Applications Voluntarily Cancelled by Applicant	Percent Applications Approved	Approximate Number Man-Days Used
Michigan	86	62	9	15	72.1	5
Minnesota	77	73	0	4	94.8	8
Ohio	14	8	6	0	57.1	1
Wisconsin	186	185	1	0	99.5	5
Total	363	328	16	19	90.4	19

Table 6. Status of Control by States and Districts, North Central Region, on December 31, 1952 - Net Acres

District	Control Problem, Acres		Initially Worked, Acres		On Maintenance, Acres		Needing Work, Acres			
							Initial Work		Re-Work	
	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Illinois										
Entire State	2,048	10,889	2,016	10,617	617	1,737	32	272	1,399	8,880
Indiana										
Entire State	10,564	92,577	9,044	79,499	7,998	64,942	1,520	13,078	1,046	14,55[illegible]
Iowa										
Entire State	6,005	50,775	3,518	34,857	1,655	19,231	2,487	15,918	1,863	15,6[illegible]
Ohio										
Entire State	22,904	216,272	17,014	180,579	9,528	95,481	5,890	35,643	7,486	85,0[illegible]
Michigan										
L. Peninsula	259,721	871,273	244,109	794,190	112,983	378,058	15,612	77,083	131,126	416,1[illegible]
Up. Peninsula	143,897	329,365	127,999	294,490	71,825	162,799	15,898	34,875	56,174	131,69[illegible]
Entire State	403,618	1,200,638	372,108	1,088,680	184,808	540,857	31,510	111,958	187,300	547,8[illegible]
Minnesota										
St. Paul Dist.	15,499	80,966	13,525	68,109	1,481	6,894	1,974	12,857	12,044	61,21[illegible]
Duluth Dist.	72,560	140,988	50,658	82,415	20,304	30,379	21,902	58,573	30,354	52,03[illegible]
Walker Dist.	120,627	273,650	99,507	217,926	46,352	84,702	21,120	55,724	53,155	133,23[illegible]
Entire State	208,686	495,604	163,690	368,450	68,137	121,975	44,996	127,154	95,553	246,47[illegible]
Wisconsin										
Eastern Dist.	200,435	660,434	180,759	581,606	88,729	276,215	19,676	78,828	92,030	305,39[illegible]
Western Dist.	301,805	901,416	262,249	744,627	154,575	412,894	39,556	156,789	107,674	331,73[illegible]
Entire State	502,240	1,561,850	443,008	1,326,233	243,304	689,109	59,232	235,617	199,704	637,13[illegible]
Region										
Entire Region	1,156,065	3,628,555	1,010,398	3,088,915	516,047	1,533,332	145,667	539,640	494,351	1,555,50[illegible]

Table 7. Status of Control by States and Ownership Classes, North Central Region, On December 31, 1952. - Net Acres

Ownership Class	Control Problem, Acres		Initially Worked, Acres		On Maintenance, Acres		Needing Work, Acres			
							Initial Work		Re-Work	
	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Illinois										
Private	800	4,537	775	4,379	55	519	25	158	720	3,860
Non-Fed.Pub.	1,248	6,352	1,241	6,238	562	1,218	7	114	679	5,030
Total	2,048	10,889	2,016	10,617	617	1,737	32	272	1,399	8,890
Indiana										
Private	7,377	74,189	5,969	61,998	5,233	49,309	1,408	12,191	736	12,689
Non-Fed.Pub.	3,169	18,209	3,057	17,322	2,747	15,454	112	887	310	1,866
Forest Service	18	179	18	179	18	179	0	0	0	0
Total	10,564	92,577	9,044	79,499	7,998	64,942	1,520	13,078	1,046	14,555
Iowa										
Private	5,366	46,650	2,880	30,784	1,596	18,826	2,486	15,866	1,284	11,958
Non-Fed.Pub.	589	3,625	588	3,573	49	199	1	52	539	3,374
Indian Service	50	500	50	500	10	206	0	0	40	296
Total	6,005	50,775	3,518	34,857	1,655	19,231	2,487	15,918	1,863	15,628
Ohio										
Private	13,255	157,007	10,439	132,810	5,703	73,083	2,816	24,197	4,736	59,727
Non-Fed.Pub.	9,134	55,186	6,060	43,740	3,310	18,369	3,074	11,446	2,750	25,371
Forest Service	515	4,029	515	4,029	515	4,029	0	0	0	0
Total	22,904	216,222	17,014	180,579	9,528	95,481	5,890	35,643	7,486	85,098
Michigan										
Private	213,055	727,444	188,172	635,773	68,345	245,729	24,883	91,671	119,827	390,044
Non-Fed.Pub.	126,744	305,731	121,065	287,524	70,451	164,979	5,679	18,207	50,614	122,545
Forest Serv.	63,804	167,343	62,856	165,263	46,012	130,149	948	2,080	16,844	35,114
Nat'l Pk.Ser.	15	120	15	120	0	0	0	0	15	120
Total	403,618	1,200,638	372,108	1,088,680	184,808	540,857	31,510	111,958	187,300	547,823

Table 7. (Cont'd.) Status of Control by States and Ownership Classes, North Central Region, On December 31, 1952. - Net Acres

Ownership Class	Control Problem, Acres		Initially Worked, Acres		On Maintenance, Acres		Needing Work, Acres			
							Initial Work		Re-Work	
	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area	White Pine	Control Area
Minnesota										
Private	88,365	277,494	68,209	207,758	15,776	39,235	20,156	69,736	52,433	168,52[illegible]
Non-Fed.Pub.	56,004	115,482	39,931	76,670	13,137	24,648	16,073	38,812	26,794	52,[illegible]
Forest Serv.	42,347	70,192	33,703	51,795	21,609	33,579	8,644	18,397	12,094	18,21[illegible]
Indian Serv.	21,970	32,436	21,847	32,227	17,615	24,513	123	209	4,232	7,71[illegible]
Total	208,686	495,604	163,690	368,450	68,137	121,975	44,996	127,154	95,553	246,47[illegible]
Wisconsin										
Private	270,228	1,009,964	217,687	784,872	114,553	392,723	52,541	225,092	103,134	392,14[illegible]
Non-Fed.Pub.	133,033	378,971	131,282	376,605	66,748	185,064	1,751	2,366	64,534	191,54[illegible]
Forest Serv.	38,082	66,554	35,261	62,219	18,764	36,098	2,821	4,335	16,497	26,12[illegible]
Indian Serv.	60,897	106,361	58,778	102,537	43,239	75,224	2,119	3,824	15,539	27,31[illegible]
Total	502,240	1,561,850	443,008	1,326,233	243,304	689,109	59,232	235,617	199,704	637,12[illegible]
Region										
Private	598,446	2,297,285	494,131	1,858,374	211,261	819,424	104,315	438,911	282,870	1,038,95[illegible]
Non-Fed.Pub.	329,921	883,556	303,224	811,672	157,004	409,931	26,697	71,884	146,220	401,7[illegible]
Forest Serv.	144,766	308,297	132,353	283,485	86,918	204,034	12,413	24,812	45,435	79,45[illegible]
Indian Serv.	82,917	139,297	80,675	135,264	60,864	99,943	2,242	4,033	19,811	35,32[illegible]
Nat'l.Pk.Serv.	15	120	15	120	0	0	0	0	15	12[illegible]
Reg. Total	1,156,065	3,628,555	1,010,398	3,088,915	516,047	1,533,332	145,667	539,640	494,351	1,555,58[illegible]

Table 8. Summary of Ribes Eradication by States and Operating Agencies, Cumulative 1918 to 1952. - Gross Acres

Oper. Agency	First Working			Second Working			Third & Other Workings			All Workings		
	Acres Worked	Ribes Destroyed	Man-Days Used	Acres Worked	Ribes Destroyed	Man-Days Used	Acres Worked	Ribes Destroyed	Man-Days Used	Acres Worked	Ribes Destroyed	Man-Days Used
Illinois												
Bur.-St.	20,724	1,533,371	3,923	10,534	618,105	2,543	13,261	573,087	3,704	44,519	2,724,563	10,17[illegible]
Indiana												
Bur.-St.	95,211	475,971	4,061	24,330	103,732	1,125	13,573	35,493	360	133,114	615,196	5,5[illegible]
Iowa												
Bur.-St.	38,971	3,619,449	27,374	7,747	741,240	5,464	2,154	165,042	1,577	48,872	4,525,731	34,4[illegible]
Ind.Ser.	500	13,462	169	500	14,150	144	200	4,155	44	1,200	31,767	35[illegible]
Total	39,471	3,632,911	27,543	8,247	755,390	5,608	2,354	169,197	1,621	50,072	4,557,498	34,7[illegible]
Ohio												
Bur.-St.	214,642	2,585,582	33,127	54,107	727,018	12,479	19,852	187,990	2,584	288,601	3,500,590	48,1[illegible]
Michigan												
Bur.-St.	1,259,839	60,273,417	253,278	407,431	7,353,231	47,020	102,854	1,170,277	10,945	1,770,124	68,796,925	311,2[illegible]
For.Ser.	103,783	5,288,807	28,444	66,909	1,105,305	11,346	43,535	323,449	6,407	214,227	6,717,561	46[illegible]
Total	1,363,622	65,562,224	281,722	474,340	8,458,536	58,366	146,389	1,493,726	17,352	1,984,351	75,514,486	357,[illegible]
Minnesota												
Bur.-St.	325,927	44,658,414	111,554	75,195	4,221,685	21,611	8,804	471,470	3,189	409,926	49,351,569	136,3[illegible]
For.Ser.	70,982	7,344,057	38,998	27,322	1,532,967	13,720	17,413	520,923	7,884	115,717	9,397,947	60,[illegible]
Ind.Ser.	31,972	10,256,701	19,359	26,851	2,790,035	13,159	21,998	1,858,885	12,221	80,821	14,905,621	44,[illegible]
Total	428,881	62,259,172	169,911	129,368	8,544,687	48,490	48,215	2,851,278	23,294	606,464	73,655,137	241,[illegible]
Wisconsin												
Bur.-St.	1,295,526	63,044,085	274,317	382,478	5,290,976	46,236	31,832	620,631	5,900	1,709,836	68,955,692	326,4[illegible]
For.Ser.	58,023	4,892,000	31,310	37,184	844,484	10,409	16,181	360,542	5,514	111,388	6,097,026	47,[illegible]
Ind.Ser.	105,904	20,976,243	71,292	55,706	3,842,475	28,473	21,266	1,027,566	10,640	182,896	25,846,284	110,4[illegible]
Total	1,459,453	88,912,328	376,919	475,368	9,977,935	85,118	69,299	2,008,739	22,054	2,004,120	100,899,002	484,[illegible]
Region												
Bur.-St.	3,250,840	176,190,289	707,634	961,822	19,055,987	136,478	192,330	3,223,990	28,259	4,404,992	198,470,266	872,3[illegible]
For.Ser.	232,788	17,524,864	98,752	131,415	3,482,756	35,475	77,129	1,204,914	19,805	441,332	22,212,534	154,[illegible]
Ind.Ser.	138,376	31,246,406	90,820	83,057	6,646,660	41,776	43,484	2,890,606	22,905	264,917	40,783,672	155,[illegible]
Region Total	3,622,004	224,961,559	897,206	1,176,294	29,185,403	213,729	312,943	7,319,510	70,969	5,111,241	261,466,472	1,182,[illegible]

Table 9. Summary of Nursery Sanitation Performed during 1952
North Central Region

Name and Ownership of Nursery	Operating Agency	Working	White Pine Trees in Nursery	Acres Protected	Acres Worked	Ribes Destroyed	Man-Days Used
			Indiana				
Vallonia Nursery, For. Service	Bureau-State	Third	900,000	15	675	0	1
Jackson Nursery, State	Bureau-State	Second	2,000,000	36	328	0	1
Total, Indiana			2,900,000	51	1,003	0	2
			Ohio				
David C. Kaneff Nursery, Private	Bureau-State	First	4,000	4	100	9	1
			Michigan				
Chittenden Nursery, For. Service	Forest Service	Twelfth	2,500,000	60	570	448	23
Roth Nursery, State	Bureau-State	Ninth	1,000,000	25	384	794	14
Total, Michigan			3,500,000	85	954	1,242	37
			Wisconsin				
Hayward Nursery, State	Bureau-State	Ninth	2,250,300	45	502	297	66
Hugo Sauer Nursery, State	Bureau-State	Twelfth	50,000	20	405	33	45
McKay Nursery No. 7, Private	Bureau-State	Second	2,000	20	342	57	2
Nepco Nursery, Private	Bureau-State	Ninth	400,000	4	98	2	2
Total, Wisconsin			2,702,300	89	1,347	389	115
Region Total - 9 Nurseries			9,106,300	229	3,404	1,631	155

Table 10. Current and Cumulative Cultivated Black Currant Elimination
North Central Region

State	Number of Properties Inspected	Found		Destroyed		Man-Days Used	Plantings Found Per 1,000 Inspections
		Plantings	Plants	Plantings	Plants		
				Calendar Year 1952			
Iowa	-	1	4	1	4	-	-
Michigan	23	23	299	23	299	46	-
Total	23	24	303	24	303	46	-
				Cumulative to December 31, 1952			
Illinois	48,067	532	4,171	60	761	*	11.1
Indiana	64,226	5	20	3	15	*	0.2
Iowa	318,600	1,612	7,335	1,607	7,314	6,531	5.1
Ohio	1,845,970	8,838	75,605	8,406	73,117	25,791	4.8
Michigan	981,738	15,036	151,146	15,023	150,884	40,290	15.3
Minnesota	211,664	3,261	23,309	3,261	23,309	12,001	15.4
Wisconsin	922,898	6,601	37,080	6,597	37,051	32,137	7.2
Total	4,393,163	35,885	298,666	34,957	292,451	116,750	8.2

* Found in connection with other activities.

Table 11. Approximate Number of Persons Employed by Months and Agencies, North Central Region, Calendar Year 1952

Operating Agency	Number of Persons by Months													Average Per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
Illinois														
State & Private	1.0	1.4	1.0	1.7	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	13.3	1.1
Indiana														
State & Private	-	-	0.5	-	-	1.0	1.0	-	-	-	0.3	0.2	3.0	0.2
Bureau	-	-	0.2	-	-	-	0.3	0.3	-	-	0.2	-	1.0	0.1
Total	-	-	0.7	-	-	1.0	1.3	0.3	-	-	0.5	0.2	4.0	0.3
Iowa														
State & Private	-	-	-	-	-	2.1	0.4	0.5	0.8	0.5	-	-	4.3	0.3
Bureau	1.0	1.0	1.0	1.0	1.6	2.0	1.4	1.0	1.2	1.0	1.0	1.0	14.2	1.2
Indian Service	-	-	-	-	0.6	0.2	-	-	-	-	-	-	0.8	0.1
Total	1.0	1.0	1.0	1.0	2.2	4.3	1.8	1.5	2.0	1.5	1.0	1.0	19.3	1.6
Ohio														
State & Private	-	-	-	0.2	0.2	0.3	1.4	0.1	0.2	0.2	-	-	2.6	0.2
Bureau	1.0	1.0	0.8	1.0	1.0	3.3	1.2	1.0	1.0	1.0	0.8	1.0	14.1	1.2
Total	1.0	1.0	0.8	1.2	1.2	3.6	2.6	1.1	1.2	1.2	0.8	1.0	16.7	1.4
Michigan														
State & Private	2.0	2.0	2.0	1.5	6.5	18.5	19.1	20.7	19.2	6.4	4.0	2.0	103.9	8.6
Bureau	3.0	3.0	3.0	3.1	6.5	5.0	5.0	5.0	5.2	4.0	2.5	2.0	47.3	4.0
Forest Service	-	-	-	0.5	14.4	20.9	28.6	23.4	0.5	-	-	-	88.3	7.4
Total	5.0	5.0	5.0	5.1	27.4	44.4	52.7	49.1	24.9	10.4	6.5	4.0	239.5	20.0
Minnesota														
State & Private	-	-	0.5	0.5	1.3	8.9	8.2	0.5	-	-	-	-	19.9	1.6
Bureau	3.0	3.0	4.0	3.5	3.0	5.7	3.0	3.0	4.0	3.6	3.2	3.0	42.0	3.5
Forest Service	1.0	1.0	1.0	2.0	8.9	22.9	36.2	36.2	4.3	-	-	0.5	114.0	9.5
Indian Service	-	-	-	-	1.3	7.2	8.0	1.2	-	-	-	-	17.7	1.5
Total	4.0	4.0	5.5	6.0	14.5	44.7	55.4	40.9	8.3	3.6	3.2	3.5	193.6	16.1

Table 11. (Cont'd.) Approximate Number of Persons Employed by Months and Agencies, North Central Region, Calendar Year 1952

Operating Agency	Number of Persons by Months												Total	Average Per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		
Wisconsin														
State & Private	2.0	2.0	2.0	3.0	4.2	17.1	35.6	26.5	12.2	5.4	2.0	2.0	114.0	9.5
Bureau	3.0	3.0	3.0	3.2	11.5	11.2	7.2	6.2	4.2	3.7	3.7	3.2	63.1	5.2
Forest Service	-	-	-	4.0	18.1	3.5	18.9	17.5	18.6	1.8	-	-	82.4	6.9
Indian Service	1.0	1.0	1.0	1.0	43.0	48.5	24.8	20.2	2.1	1.0	-	-	143.6	12.0
Total	6.0	6.0	6.0	11.2	76.8	80.3	86.5	70.4	37.1	11.9	5.7	5.2	403.1	33.6
Project Office														
Bureau	3.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	36.6	3.0
Region														
State & Private	5.0	5.4	6.0	6.9	13.3	49.0	66.7	49.3	33.4	13.5	7.3	5.2	261.0	21.6
Bureau	14.6	14.0	15.0	14.8	26.6	30.2	21.1	19.5	18.6	16.3	14.4	13.2	218.3	18.2
Forest Service	1.0	1.0	1.0	6.5	41.4	47.3	83.7	77.1	23.4	1.8	-	0.5	284.7	23.8
Indian Service	1.0	1.0	1.0	1.0	44.9	55.9	32.8	21.4	2.1	1.0	-	-	162.1	13.5
Total	21.6	21.4	23.0	29.2	126.2	182.4	204.3	167.3	77.5	32.6	21.7	18.9	926.1	77.1

Table 12. Current and Cumulative Summary of Canker Pruning. From Inception to December 31, 1952. North Central Region.

State	Number of Areas Treated	Number of Trees Examined	Number of Trees Treated	Number of Trees Removed	Number of Cankers Removed	Number of Man-days Used
			Calendar Year 1952			
Iowa	8	4,200	18	8	24	4
Michigan	4	16,000	9,400*	0	2,250	120
Wisconsin	2	51,235	25,950**	215	4,490	76
Total, 1952	14	71,435	35,368	223	6,764	200
			Cumulative to December 31, 1952			
Indiana	4	973	8	0	11	1
Iowa	66	51,737	773	756	2,014	63
Ohio	5	1,306	44	13	126	15
Michigan	363	819,206	53,160	520	109,238	3,558
Minnesota	186	473,514	46,542	6,434	80,490	2,090
Wisconsin	9	316,793	45,525	4,426	30,889	428
Region	633	1,663,529	146,052	12,149	222,768	6,155

* Includes about 7,400 trees silviculturally pruned, without visible cankers, and 2,000 trees from which cankers were removed.

** Includes 23,339 trees silviculturally pruned without visible cankers, and 2,611 trees from which cankers were removed.

Table 13. North Central Regional Expenditures, by States and Appropriations, Calendar Year 1952

Appropriations	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Project Office	Total
State Indirect Aid January to June	$ 210.00	$ 300.00	$ 450.00	$ 432.00	$ 675.00	$ 1,300.00	$ 3,780.00	$ -	$ [illegible]
State Indirect Aid July to December	210.00	300.00	450.00	432.00	675.00	1,300.00	3,780.00	-	[illegible]
State Direct Aid January to June	3,412.38	913.30	436.30	347.00	8,784.08	3,574.98	9,708.07	-	27,[illegible]
State Direct Aid July to December	2,833.91	892.30	585.16	351.00	14,567.92	2,251.28	21,591.06	-	43,[illegible]
Subtotal, State	6,666.29	2,405.60	1,921.46	1,562.00	24,701.00	8,426.26	38,859.13	-	84,542.[illegible]
Bureau W-2 January to June	-	-	-	110.23	8,738.78	8,029.69	9,015.96	12,493.83	38,[illegible]
Bureau W-2 July to December	-	-	-	100.64	9,079.17	8,243.03	8,647.75	10,861.46	36,[illegible]
Bureau W-3 January to June	10.40	429.08	2,108.86	3,082.53	2,922.60	2,253.28	4,475.07	-	15,[illegible]
Bureau W-3 July to December	-	603.39	2,497.11	2,306.46	3,325.64	782.05	5,178.26	-	14,[illegible]
Forest Service January to June	-	-	-	-	7,897.24	23,703.84	5,645.74	-	37,[illegible]
Forest Service July to December	-	-	-	-	11,884.80	24,684.44	14,796.08	-	51,[illegible]
Indian Service January to June	-	-	119.00	-	-	3,099.00	20,488.81	-	23,[illegible]
Indian Service July to December	-	-	-	-	-	3,555.62	12,951.00	-	16,[illegible]
Indian Tribal January to June	-	-	-	-	-	-	519.53	-	[illegible]
Indian Tribal July to December	-	-	-	-	-	-	-	-	
Subtotal, Federal	[illegible]	[illegible]	4,724.97	5,599.86	43,840.23	74,356.95	81,708.40	23,355.29	234,660.37
Subtotal, State and Federal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	82,783.21	120,567.53	23,355.29	319,203.[illegible]
Other Expenditures	[illegible]	[illegible]	[illegible]	[illegible]	38,538.53	46,016.42	66,944.15	10,881.16	169,706.[illegible]
Total	$ [illegible]	$ [illegible]	$ [illegible]	$ [illegible]	$ 82,378.74	$ 128,799.63	$ 187,511.68	$ 34,236.45	319,163.[illegible]

Table 13 A. North Central Region Expenditures, Including Project Office, Pro-rated to States on Basis of Total Expenditures, By State and Activity, Calendar Year 1952.

Activity	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Entire Region	Percent each Activity
Leadership and Coordination (a)	$1,763.08	$2,111.00	$1,413.00	$3,552.00	$14,922.58	$18,576.13	$ 24,603.91	$ 66,941.70	21.0
Local Control	639.00	570.00	4,600.93	1,963.00	48,511.94	59,273.69	98,214.81	213,773.37	67.0
Nursery Sanitation	-	66.00	300.00	150.00	413.76	200.00	1,339.71	2,469.47	0.8
Black Currant Elimination	-	-	-	-	275.00	-	-	275.00	0.1
Canker Pruning	-	-	40.50	-	1,627.18	-	709.19	2,376.87	0.7
Surveys	1,353.14	1,420.74	-	1,795.00	6,985.22	4,259.03	3,018.00	18,831.13	5.9
Informational and Other Field Work	3,758.47	350.33	1,105.00	1,061.86	1,232.55	7,007.36	-	14,515.57	4.5
All Activities	$7,513.69	$4,516.07	$7,459.43	$8,521.86	$73,968.23	$89,316.21	$127,885.62	$319,183.11	100.0
Percent each State	2.3	1.4	2.3	2.7	23.2	28.0	40.1	100.0	

(a) Includes $23,355.29 of Project Office funds, all charged to Leadership and Coordination, pro-rated to states according to total funds spent in each state.

Table 13 B. Total Funds Spent in Each State Divided Into Salary and Non-Salary Categories. North Central Region, Calendar Year 1952.

Expenditure Category	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Project Office	Total
Salary	$ 5,012.56	$2,285.00	$5,799.05	$5,863.86	$60,969.84	$66,039.55	$108,499.16	$18,851.11	$273,320.[illegible]
Non-Salary	1,664.13	1,153.07	847.38	1,298.00	7,580.39	16,737.66	12,078.17	4,504.18	45,862.[illegible]
Total	$ 6,676.69	$3,438.07	$6,646.43	$7,161.86	$68,550.23	$82,777.21	$120,577.33	$23,355.29	$319,183.[illegible]

WHITE PINE BLISTER RUST CONTROL IN THE NORTHEASTERN REGION

ANNUAL REPORT FOR 1952

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine
20 Sanderson Street
Greenfield, Massachusetts

FOREWORD

This report relates to activities during the calendar year 1952 in the control of the white pine blister rust disease in the Northeastern Region comprising the following 18 states; namely, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Tennessee, Kentucky, Georgia, North Carolina and South Carolina.

The program is operated by the Bureau of Entomology and Plant Quarantine, Agricultural Research Administration of the United States Department of Agriculture, in cooperation with the department or agency in each state having statutory responsibility for the control of the disease, and with other federal land-owning agencies. As of January 1, 1952, the problem involved the effective and efficient destruction of ribes on a net control area of 18,267,347 acres, for the protection of the white pine on 7,044,100 acres.

INDEX

PART A - SUMMARY

PART B

INDEX TO TABULAR SUMMARIES 1952

INDEX TO CHARTS

SECTION A - SUMMARY

Statement of the Problem

The white pine blister rust disease was accidently introduced into the Northeastern States about 1900. Since then, the fungus has spread throughout the range of white pine in this region. The rust has been found in every state except Kentucky and South Carolina, and it probably is already there. Progress of infection in areas where control has not been established clearly indicates that young white pine stands cannot be brought to maturity in the presence of ribes, the alternate host plants without which the disease cannot spread.

Eight species of native ribes and many cultivated varieties are found in the Eastern States. Distribution of the bushes varies in density from scattered individual plants to large concentrations throughout most of the region. Ribes seed stored in the forest duff may remain viable for many years and bring about regeneration of these plants in areas disturbed by logging, fire, wind and other factors Eradication of ribes is accomplished by uprooting the plants or killing them with chemicals such as 2,4,5-T.

Throughout its commercial range from Maine to Georgia, white pine is an important component of the forest. In many sections of New England, eastern New York, Virginia and North Carolina it is the most important forest tree and over large areas comprises the entire forest. White pine is a favored species in forest management, and has been used extensively in reforestation.

White pine is a natural resource which contributes to the welfare of the region and the nation, economically, aesthetically and in watershed protection, irrespective of ownership. The blister rust problem is created by nature, and the cost of control is to a large extent dictated by nature's distribution of ribes. Present owners of young white pine stands, the timber crop of the future, have little incentive to invest money in protection knowing that financial benefits will not accrue during their lives. Because of the complexities of the problem, and the fact that loss of white pine would affect everyone, protection of this resource is chiefly a public responsibility.

Purpose of the Program

The purpose of the program is to establish and maintain control of the disease in white pine stands which need protection and give indication of sufficient value at maturity to warrant the cost. Selection is based on quantity, quality and age of pine. Seven and a quarter million acres of pine are designated for protection, approximately 60% of the total in the United States. In the Northeastern region, about 15% of the pine is federally-owned. Most of the remainder is distributed among more than 222,000 private owners. The control area (pine and protection zone), on which the ribes population is to be kept at a minimum until maturity of the trees is assured, covers approximately 18 million acres in the New England States, New York, New Jersey, Pennsylvania, Delaware, Maryland and the mountainous sections of Virginia, West Virginia, North and South Carolina, Georgia, Tennessee and Kentucky.

The immediate objective is to place at least 90% of the control program in this region on a maintenance basis by 1956 after which control can be maintained indefinitely at approximately half present costs.

Values Involved

The present and potential stumpage value of white pine in the control area of this region is estimated at more than 800 million dollars. Eighty-two percent of this value is in immature growth needing protection until the trees can be harvested. These values are constantly being renewed as natural reproduction of white pine occurs on cut-over areas, abandoned fields and pastures. During the period 1904 to 1947 inclusive, over 29½ billion board feet of white pine lumber was produced in the Northeastern States portion of the region, and an additional billion board feet in the Southern Appalachian States during the period 1928 to 1947 inclusive. The total economic value of white pine to New England alone has been estimated at 70 to 80 million dollars a year by the Federal Reserve Bank of Boston.

The value of white pine from the scenic and recreational viewpoint is probably at least equal to the commercial value for the production of wood products. The outstanding importance of white pine to the increasing recreational business in the region is demonstrated in the many stands of white pine which constitute the principal attractant in the youth camps, summer and winter resorts in countless numbers, and as scenic backgrounds along motor roads and in recreational areas visited by thousands of tourists annually.

There is abundant evidence of the destructiveness of the disease in the Northeastern States. Studies of selected areas in Maine, New Hampshire, Vermont and New York showed 45 percent of the pines dead or certain to die, representing at least 50 percent of the crop volume. In a study of mature pine at Waterford, Vermont, 73 percent of the crop pines were dead or sure to die as a result of the rust. The dead trees plus their potential increment represented a 49 percent decrease in volume. An additional 25 percent of the volume was in living pines with stem cankers. A recent study by the Forest Service of uncontrolled blister rust on a one-acre plot in Virginia indicated 62.5 percent of the pines dead and an additional 35 percent infected. Observations in several small areas in the Northeast have shown that nearly all white pine reproduction was killed within a few years. These examples, however, are not representative of average conditions.

The loss from blister rust in production of white pine lumber in the Northeastern States has been estimated at nearly 7 billion board feet with a stumpage value of 53 3/4 million dollars and a lumber value of $180 million. Application of control measures has saved at least an equal amount of white pine.

Cooperation

The blister rust control program in the Northeastern region is an outstanding example of cooperative effort against a plant pest. More than half the entire cost of the control project on state and private lands, not including cost of emergency programs, has been assumed by states and local cooperators. Since 1918, over 42,000 pine owners have contributed $526,410, towns $1,077,637, counties $220,304 and states $4,542,170. In 1952, 13 states, 19 counties, 221 towns and 28 individuals spent $317,981 on control activities.

The Forest Service, Park Service and Indian Service have been consistent cooperators and have borne the complete cost of control operations on federally-owned lands.

The Bureau of Entomology and Plant Quarantine provides leadership, technical direction and coordination to the entire program. In addition, the Bureau pays

part of the cost of cooperative control work on state and private lands.

State cooperators in Maine, New Hampshire, North Carolina, Vermont and West Virginia are taking action to increase participation of state and local agencies in the project. In the three northern New England States efforts are being made to secure town appropriations in amounts more suitable to control needs.

Cooperation with foresters and other conservationists in public and private employment is steadily improving. There is much to be accomplished. Knowledge and recognition of the blister rust problem are important in management of white pine both from the standpoint of timber production and control of the disease. Efforts to bring about closer cooperation must be continued through demonstrations to forestry students and discussions of the field for mutual aid with practicing conservationists.

Status of Program

As of October 1, 1952 the control area in the Northeastern Region totaled 17,995,846 acres including 7,258,390 acres of white pine meeting standards for protection. Control had been established on 76% of the control area and partial control on an additional 22%. Detailed mapping had been completed on 90% of the control area.

Under some conditions control is established in one operation. In most cases one or more additional workings at 5-year intervals are needed to reduce the ribes population to the required minimum. Control can then be maintained through examination at less frequent intervals to locate and destroy any menacing development of ribes.

The size of the control area is not static since timber harvest, fires, wind storms, natural reproduction and planting of white pine frequently make additions or reductions necessary. Disturbances caused by fires, logging and wind often favor ribes regeneration and growth which may become a menace if not promptly destroyed. Examination work prior to scheduling of ribes eradication enables necessary adjustments in control area boundaries and location of danger spots. Particular need for this work exists in the Northeastern States where, due to the small units of land ownership, man-made changes occur more frequently. As the maintenance phase of the program approaches, examination work by trained personnel becomes of increasing importance in keeping protection costs to a minimum.

Initial ribes eradication work is still needed on 2% of the control area, or 392,438 acres and nearly 4 million acres require examination and necessary rework prior to meeting maintenance status. The 13,649,068 acres now on maintenance will need examinations at 5 to 10-year intervals. Experience indicates that about 15% will require more intensive ribes eradication work to maintain control. Detailed mapping of approximately one million acres of control area is needed, largely in New Hampshire. It is expected that detail mapping will not be required in the remainder of the unmapped area. There will be a continuing need for some revision of present control area maps to facilitate planning and execution of future control operations. Adequate field maps are essential to record effectively the locations where continued control efforts will be required and to indicate concentrations of ribes for future reference.

At the present rate of progress, control will be established on 90% of the

control area by 1956. As control operations are constantly being extended to cover new areas of white pine, there is little possibility of ever placing more than 90% of the program on a maintenance basis. The blister rust disease cannot be eradicated. Therefore, control must be maintained as long as successive crops of white pine are desired.

The total direct and indirect costs of all phases of the control program to all agencies to date plus the estimated costs to 1968 represent 3.8% of the present and potential value of the white pine in the control area of the region, or 8.3 cents per pine acre per year.

Accomplishments during the Year

Leadership

Over-all leadership, planning, coordination, technical and supervisory services were rendered through the Bureau staff of trained workers to over three hundred cooperating agencies conducting control operations on federal, state and privately-owned white pine lands in 18 states and involving about 700 seasonal workers.

Ribes Eradication

During the 1952 field season, 1,007,286 acres were cleared of 3,348,185 wild and cultivated ribes by 34,623 man days of labor. In addition 114,784 acres of the area on maintenance were examined for ribes. It was determined as a result of 859 man days of work that no additional control measures were needed at this time even though 18,171 ribes were destroyed. The area on maintenance increased by 704,766 acres, or 5%.

Special Control Work

Sanitation work for the protection of white pine reforestation stock was performed only in the environs of 6 nurseries in Connecticut and New York. Canker elimination work, to save pines with high aesthetic value, was restricted to state lands in 8 towns in New York.

Examination and Detail Mapping Work

In preparation for ribes eradication work 1,280,744 acres of control area were examined to determine need for mapping and/or ribes conditions. This resulted in a net reduction of 271,501 acres of control area and 65,418 acres of white pine. Initial mapping was performed on 162,532 acres and remapping on 573,727 acres. Surveys outside the control area to locate new areas of white pine covered 1,175,078 acres. Time spent on this work totaled 5,390 man days, mostly during the fall and winter months.

Informational and Service Work

Informational and service activities by the leadership personnel involved attendance at local meetings, including participation in the deliberations of State Forest Practice Boards, Pest Control Committees, Soil Conservation District Committees and State and County Agricultural Mobilization Committees. Scripts for local news items, radio and television broadcasts were prepared. Demonstrations were arranged and displays shown at agricultural fairs and meetings. The motion pictures continued to be an important adjunct to informational work.

Service activities included thousands of personal interviews and follow-up calls and instructions in the field to many individuals. Instructions were given to students in forestry schools and contacts made with foresters, to enable them to more readily identify the disease, recognize the importance of blister rust control and the salvaging of infected pines, and to impress upon them the necessity for the adoption of cutting practices to keep ribes suppressed.

The effectiveness of informational and service activities is reflected in the local cooperation secured in 1952.

Publications

"Blister Rust Damage at Waterford, Vermont" - Dr. P. L. Rusden
JOURNAL OF FORESTRY, Vol. 50 NO. 7, July 1952

"Field Studies of Ribes Regeneration on Areas Affected by the New England Hurricane of 1938" July 1952 - Dr. P. L. Rusden and C. C. Perry (Dittoed)

"White Pine - Natures Gift to the Northeastern States - Must be Protected From Blister Rust" - C. C. Perry, EPQ Ms. NO. 2242 (Accepted for publication as a Program Aid leaflet)

"Blister Rust Spot Infection Summary - Northeastern States - Progress Report April 1952" - C. C. Perry, (Dittoed)

Changes in Operations and Trends

The term "examination" is used rather broadly in the Northeastern Region to denote several activities which vary considerably in amount of work involved. Surveys outside the control area to locate pine; intense inspection of white pine stands to determine area covered, quality and size class of pine and width of protection zone, in connection with mapping; pre-eradication surveys to determine ribes conditions; and winter examinations of maintenance areas to locate disturbances are all classed as examinations. Each activity is necessary during some phase of the program, and the method used is important. Considerable attention has recently been given to the methods being followed in determining need for ribes eradication work on areas placed on maintenance five to ten years ago. In the interest of clarifying the activities now called examinations and improving methods, the subject will be discussed at a conference of area leaders this winter.

During 1952 there was a considerable increase in the use of 2,4,5-T in spraying concentrations of ribes. Excellent results are being obtained in eradicating wild black, skunk, and cultivated flowering currants. Results with gooseberries vary, although some success has been achieved in killing the large pasture type. In 1952, ribes concentrations covering approximately fifty-five acres and containing over a million bushes were treated with 2,4,5-T.

A State-owned plane was used by district leaders in New York to examine pine areas in Columbia and Westchester Counties which have not been worked for ten or twelve years. Twenty-eight percent of the control area was discontinued by this observation. The plane was also used to spot white pine stands scattered over 225 square miles of wild country in the Adirondack Region. Leaders estimate that six hours of flying time saved six weeks of ground work.

Changes in Financing

Beginning with the fiscal year 1953, considerable improvement was made in administration of Bureau funds in this region. Blister rust funds, with the exception of those chargeable to operation of the project office at Greenfield, Mass., are budgeted by states. Forest Service funds made available to the project are budgeted by state and National Forests. Quarterly operating budgets and a uniform bookkeeping system make it possible for project and area leaders to know at all times the status of federal funds in each state and on each National Forest. The improved system will also make it easier to determine expenditures during any period for which reports are requested by state or federal agencies.

Changes in Organization

Continued progress occurred in making adjustments necessitated by the regional reorganization of 1950 and 1951. The appointee in charge of the program in the former Southern Appalachian Region was transferred to the Golden Nematode project. The Southern Appalachian States were reclassified as one area and subdivided into three districts; namely, District I - North Carolina, Tennessee, Georgia and South Carolina; District II - Virginia; and District III - West Virginia and Kentucky. An area leader and three district leaders were assigned and control aids where needed. Each district leader is not only responsible for the general supervision of the work performed by his control aids, but also directs control operations in designated counties.

The George Washington National Forest assigned a Forester to be responsible for the correlation of blister rust control activities with management plans on the forest.

The area leader for New York and Pennsylvania was promoted to the position of assistant project leader with headquarters at Greenfield, Massachusetts, and his place filled by the transfer of an appointee from the Gypsy Moth Control Project. A clerk-stenographer vacancy was also filled at the project office. Two GS-5 supervisors, one in Connecticut and the other in Pennsylvania were promoted to district leader positions (GS-6).

Changes in cooperating state agencies included the transfer of the administration of the blister rust program in Virginia from the State Entomologist in the Department of Agriculture and Immigration to a new Division of Forest Insect and Disease Investigations in the Virginia Forest Service. In Massachusetts, responsibility for blister rust control was transferred from the Department of Agriculture to the office of Moth Superintendent in the Department of Conservation.

Interproject cooperation was practiced by the temporary assignment of two blister rust control appointees to other projects; one spending four months on a Gypsy Moth Appraisal Survey and the other, assisting for seven weeks on the Oak Wilt project in West Virginia. The leaders in New England were given instructions and material to assist locally in gypsy moth quarantine enforcement.

In conformity with departmental policy, the headquarters of a district leader in New Hampshire were changed so that he could be located in the same building with PMA and SCS. Arrangements were also made for a gypsy moth quarantine inspector in New Hampshire to share office space with a district blister rust control leader.

Changes in Distribution of Pest

In the Northeastern Region, the progress of control is so far advanced that no extensive new areas of heavy damage are being found. Numerous examples were reported, however, of heavy infection in unprotected areas, but most of these were limited in extent. New infection has been noted in many instances where recurring ribes, due to disturbances from fire, logging and wind, have become a new menace. In the Southern Appalachian Area infection on pine was reported during 1952 in 4 new counties in 2 states. It was found in Monroe County, West Virginia, and in the Counties of Carroll, Smyth and Washington in Virginia. Additional infection areas were also located in Morgan County, Tennessee; Avery County, North Carolina; and Grayson and Botetourt Counties, Virginia.

Field Investigations and Their Effect on Program

A method of sampling areas placed on maintenance ten years ago to determine present need for ribes eradication work was tried in Connecticut. Instead of the scouting method previously used, approximately five to ten percent of the most likely ribes sites were checked. If few or no ribes were located the entire unit of control area was assumed to be in safe condition for another ten years. When dangerous concentrations were located by the sampling process a larger portion of the area was examined. The method was checked and found adequate for Connecticut conditions. Rate of coverage increased from 78 to 200 acres per man day.

Treatment of black currants and skunk currants with a solution of 2,4,5-T after the leaves have reached full growth (July to September) has proved effective and is now standard practice in eradicating large concentrations of these species. In the interest of lengthening the period of effective spraying work, skunk currants were treated in early May 1952. Results appear successful, but will not be determined with certainty until the spring of 1953. Efforts toward determining effective use of 2,4,5-T in eradication of gooseberries are being continued.

Recommendations

It is recommended:

Bureau allotments for blister rust control in Region I during the fiscal year 1954 be at least equal to those for the 1953 fiscal year. Operations at the present scale are required to reach the goal of a 90% maintenance program by 1956.

A helicopter be assigned for use in examination and mapping of control areas in the early spring or late fall of 1953 to accelerate this work, especially in Maine and New Hampshire.

Uniform terms be adopted by all regions to designate blister rust control operations which have the same objective.

The omnibus tables be revised to reflect more adequately accomplishments and costs of pre-maintenance and maintenance programs.

The Office of Exhibits construct a portable blister rust display similar to one made for use in the Appalachian area, but approximately 1/3 the size and of lighter construction. Transported in a passenger car, it could be readily displayed in store windows, at meetings, fairs, etc.

Program aid leaflet "White Pine - Nature's Gift to the Northeastern States - Must be Protected From Blister Rust," accepted for publication as EPC Ms. NO. 2242, be printed and made available for use in this region.

Two 1947 passenger cars now operated by leader of So. Appalachian area and personnel at regional office be replaced.

In the important pine producing states, men qualified as scouts be employed on a permanent basis and paid either from state or federal funds. Such field workers are essential especially in maintenance operations.

In the event replacement of present area leader in New York becomes necessary and if the New York-Pennsylvania area set-up is to be maintained, a man with leadership experience in blister rust control be appointed. The grade of the position should remain GS-11.

As vacancies occur in district leader positions, wherever practicable, no replacements will be made, but existing districts enlarged and assistants at lower grade provided to meet the situation.

H. R. Offord, Project Leader, Blister Rust Control Development and Improvement, visit this region to review accomplishments in chemical eradication and make suggestions for more effective use of 2,4,5-T.

The Northeast Forest Experiment Station conduct investigations on relation of white pine management to the blister rust control problem in Region I.

Changes in Federal and State Laws and Quarantines Affecting Program

Quarantine No. 63 was amended to permit shipment of white pine into Georgia, Kentucky, South Carolina and Tennessee.

PART B

GENERAL STATEMENT

Importance of White Pine

The 7¼ million acres of white pine in the aggregate control area in the region represents 61% of the total pine acreage in the United States designated for blister rust protection work. The volume of mature pine amounts to over 10 billion board feet with a stumpage value of $145 million. In addition, the immature pine has an estimated potential volume of 46 billion board feet, worth $655 million. In the Northeastern States section of the region white pine is generally distributed in Maine and New Hampshire, but confined to rather well defined portions of the other states. In the Southern Appalachian section, white pine occurs chiefly in mixture with other species or as an understory in scattered areas along a strip from 3 to 8 counties wide in the western part of Maryland, Virginia and Tennessee, northern border counties of Georgia, and in 15 counties in east central Kentucky.

The most important contribution of the white pine forests is represented by the production of lumber. During the period 1904 to 1947, inclusive, over 29½ billion board feet of white pine lumber was produced in the region. During the ten-year period from 1938-1947, inclusive, 46% of the total production of 16 billion board feet of white pine lumber in the United States, was produced in this region. In spite of the heavy drain that has taken place, current reports show a continuing comparable production.

The substantial production of lumber is indicative of the suitability of the lands in the region for the growing of white pine. Observations in the Southern Appalachians show exceptionally rapid growth rates in many places. With the killing of the chestnut, white pine is becoming of increasing importance in the development of the forests in these states. The amount of pine is steadily increasing there through natural regeneration and increased interest in planting. The blister rust control program has helped materially in both phases of this increase in the forest resource.

Interest in management of white pine is steadily increasing. The U. S. Forest Service is making a special effort to favor the regeneration and growth of white pine by selective cuttings especially on its lands in the Southern Appalachian States. Correlating control activities and cutting practices makes the control job easier and more effective. Marking timber with ribes regeneration in mind will materially reduce their come-back.

Reports from all districts indicate an increasing amount of pine reproduction especially in cut-over areas, abandoned fields and pastures. There is a gradual change from clear cutting to some form of partial cutting except where portable mills are concerned. There is increasing evidence that such agencies as the New England Forestry Foundation, American Forest Products Industries, and many other forestry organizations together with Extension, District, Farm and Consulting Foresters are convincing landowners of the benefits derived from better management of their forests, including protection against fire, insects and disease.

Considerable effort is being made to favor white pine by release cuttings and treatments. For example, an owner at Peru, New York, had a tract of 25 acres of pitch pine with a dense understory of stunted white pine. The pitch pine 3" to 10" DBH was girdled in 1948 and most of it died the following summer. Observations in 1952 showed the white pine had grown more in height since the release than during the first dozen years of its existence.

In Saratoga County 900 acres of pitch pine and gray birch were planted by the county to white and red pine in 1933 and 1934. During 1947 and 1948 the birch and pitch pine were girdled, but the understory had become stunted because the releasing had been unavoidably delayed. Now the growth rate is over a foot per year where previously it amounted to only 2 or 3 inches under suppressed conditions. One of the important results was the absence of weeviling in the pine.

On the Pack Forest at Warrensburg, New York, shelterwood cuttings are being made in mature pine stands to favor white pine reproduction and to utilize the overstory to provide partial shade for the young trees and prevent weevil damage. Clifford Foster, in charge of this forest, believes white pine is the most profitable forest crop in the region especially if properly managed.

There is continued interest in growing of white pine for reforestation purposes. This is particularly in evidence in the Southern Appalachian States where millions of white pine seedlings are being produced in forest nurseries in 6 states and by the TVA.

District leaders frequently comment regarding property owners salvaging infected white pines of commercial size as a result of advice from both public and private foresters. This demonstrates that progress is being made in securing a more cooperative interest by foresters. For example, District Leader Holcomb recently worked with the assistant county forester marking pine for a selective cutting at Ross Park in Waverly, New York. About 50% of the pines marked for cutting were infected with blister rust.

The outstanding importance of white pine for its aesthetic value to the increasing recreational business in the region is demonstrated in the many stands of pine which constitute the principal attractant in the youth camps, summer and winter resorts, and recreational centers in countless numbers. In the Southern Appalachians, the white pine forests form scenic backgrounds along motor roads and in recreational areas in the Blue Ridge Parkway of North Carolina and Virginia, the Shenandoah National Park in Virginia, and the Great Smoky Mountain National Park in North Carolina and Tennessee.

Occurrence of Pine Infection

The disease was accidentally introduced into the Northeastern States at the turn of the century on shipments of imported white pine planting stock. By 1915 it had spread to native white pine and soon became general. In contrast to conditions in the Northeastern States, planting of imported infected stock was rather limited in the Southern Appalachian States. At the present time, infection on the pine host is generally distributed in counties in western Maryland, eastern West Virginia, western Virginia, and in a few counties in western North Carolina. It has been found in one county in northeastern Tennessee.

Ribes Eradication Work During 1952

Over a million acres (1,007,286) were cleared of 3,348,185 ribes as a result of 34,623 man days of labor. An additional area of 704,766 acres was placed on maintenance, a control condition where no further serious damage to white pine will occur until disturbances by logging, fire or wind result in the restocking of ribes to a menacing degree.

Compared with 1951, the accomplishments show increases as follows: 1.6% in acreage worked, 6.9% in the number of ribes destroyed, 2.7% in available man days and 5.5% in acreage worked per man day on ribes-bearing lands. The percentage of the net control area in the maintenance classification increased from 70.9% in 1951 to 75.8% in 1952. The net control area in the Northeastern Region was reduced during 1952 by 271,501 acres through the discontinuance of areas no longer supporting white pine stands meeting standards, and through the reduction in widths of protection zone borders.

Of the total acreage worked, 13.4% represented first workings, 44.1% second and 42.5% third or other workings, including maintenance workings. Percentages of coverage by ownership classes were as follows: 95.3% state and private, 4.7% national forests and .02% national parks. Only 32.5% of the work in the Southern Appalachian Area was performed on state and private lands.

Status of Ribes Eradication Work

Over-all leadership, planning, coordination, technical and supervisory service rendered through the Bureau staff of trained workers to hundreds of cooperating agencies conducting control operations on federal, state and privately-owned white pine lands in 18 states has resulted in establishing control on 75.8% of the control area in the region. This accomplishment is represented in the figure of 13,649,068 acres currently in the maintenance classification. The disease is under partial control on an additional 22% of the control area. The attainment of these control accomplishments has involved the destruction of 352,325,204 ribes.

Table 1 summarizes accomplishments in ribes eradication in the present net control area from 1918 to 1952 inclusive, by land ownership classes. Details by land ownership classes and by agencies are included in Table 24 in the Appendix.

Table 1 - Net Ribes Eradication Work 1918-1952 Inclusive

(September 30, 1952)

Land Ownership Class	Acreage of Control Area	Acreage Worked			Acreage on Maintenance	Percentage of Control Area			
						Worked			On Maintenance
		Once	Twice	Other		Once	Twice	Other	
State & Private	16,063,951	15,671,952	7,178,652	3,064,265	11,801,182	97.6	44.7	19.1	73.5
National Forest	1,775,514	1,775,075	117,265	67,806	1,700,287	99.9	6.6	3.8	95.8
National Park	155,936	155,936	18,783	13,009	147,154	100.0	12.0	8.3	94.4
Indian Lands	445	445	-	-	445	100.0	-	-	100.0
Total	17,995,846	17,603,408	7,314,700	3,145,080	13,649,068	97.8	40.6	17.5	75.8

An essential phase of the control program involves surveys and the examination of control areas to determine current conditions and the preparation of field maps showing the location of pine requiring control work, protection zone lines, ribes sites, etc., as a guide to ribes eradication units. Detailed mapping in the Northeastern States had been completed on September 30, 1952 on 16,172,558 acres, representing 89.9% of the net control area.

In the Southern Appalachian Area, mapping has been designated as Survey Work. The survey is complete in 15 counties in North Carolina and only a small amount will be necessary in the remaining 10. In Virginia and West Virginia the survey is nearing completion. The survey is finished in Delaware, Maryland, Kentucky, Tennessee, Georgia and South Carolina. Where survey work has been completed, there will of course, be future need for re-survey to keep up with normal changes in white pine distribution brought about by planting, natural reproduction, cutting, fire, etc.

In the Northeastern States, special work contributing to the control status has included the protection of white pine reforestation stock in 35 federal, state and commercial nurseries. A campaign to completely eliminate the especially susceptible European black currant required the inspection of nearly 1-3/4 million properties and the removal therefrom of 103,000 plants in 46,397 patches. A special blister rust canker elimination project on public lands resulted in the destruction of 287,442 fatally infected pines and the treatment of an additional 395,926 pines by the removal of 946,776 cankers.

Through informational and service activities the public has been kept fully informed and has responded commendably in support of and participation in the control program. In contact with forest owners, the project personnel has emphasized the importance of forest management and in particular has stressed selective cutting as an aid in preventing the regeneration of ribes. The personnel in the Northeastern States from 1922 to 1952 addressed 11,401 meetings, attended by 639,576 individuals. The press has been furnished 12,891 informative items, and 6,825 displays have been placed in store windows, at agricultural fairs or other places of public assembly. Motion picture films have been used effectively. Special courses of instruction have been arranged particularly in recent years at the several forestry schools. Information has also been disseminated to the general public by means of radio and television.

All of the above described activities have been designed to insure the future capacity of the white pine forests to add to the wealth of the region through products and service.

Methods Development

Constant attention has been given to reducing costs and increasing the effectiveness of control work. Among the notable accomplishments in this respect have been the general reduction in size of eradication crew units, the reduction of protection zone widths, the use of the drag-line system, the application of salt and borax for the eradication of bushes in difficult situations and the use of ribicides such as 2,4,5-T. Stress has been placed on the training of field personnel including the development of manuals of instruction. Special efforts have been devoted to increasing the efficiency of detailed mapping procedures, the devotion of time to the examination of control areas to determine present control needs, and most especially, the training of scouts to cope with the present situation where intensive crew work is no longer needed on extensive acreages. Another important illustration of the effort to increase the efficiency of the program relates to the assignment of personnel. In October 1950, the state leader positions were abolished and replaced by area leaders, each charged with the responsibility for the control program in two or more states. Concurrently with this change, districts were reorganized to more efficiently handle the present work load. Coincident with this reorganization, the regional office was moved to Greenfield, Massachusetts, as part of a plan to centralize Bureau activities in five regions in the United States. Since 1950, many adjustments have been made in perfecting the regional reorganization.

The Continuing Problem

Although excellent progress in the control of the disease has been made, much remains to be done to insure adequate protection of the pine resources of the region. The continuing problem is challenging. Future requirements include the performance of first work on 2.2% of the control area, or 392,438

acres and re-examination to determine the need for rework on nearly 4 million acres not as yet in the maintenance classification. In addition, periodic examination at 5 to 10-year intervals chiefly to locate disturbed areas will be necessary on about 13½ million acres now on maintenance. Work will be needed in those portions where ribes have become a new menace to the pines. It is anticipated this will involve yearly examination and some remapping of 1/10th of the control area, but intensive ribes eradication on only 15% of the area examined. About two million acres in the Northeastern States have never been initially detailed mapped. However, a considerable percentage of the unmapped area is already on maintenance and mapping will be needed only on such portions as are designated eventually for rework. To cope with this continuing problem will require competence of the highest order, maintained through continued federal, state and local support and participation.

Chart I shows the status and workload of control as of September 30, 1952.

Table 2 presents a regional summary by land ownership of 1952 ribes accomplishments; and Tables 23 and 24 in the appendix show net data as of September 30, 1952. Similar data recorded by states and by operating agencies on an accumulative basis for the period 1918-1952 are in the omnibus tables and therefore are not included in this report.

A summarization of federal and cooperative expenditures by states for all activities during 1952 will be found in Table 22 in the appendix.

CHART I

[illegible]

SEPTEMBER 30, 1952

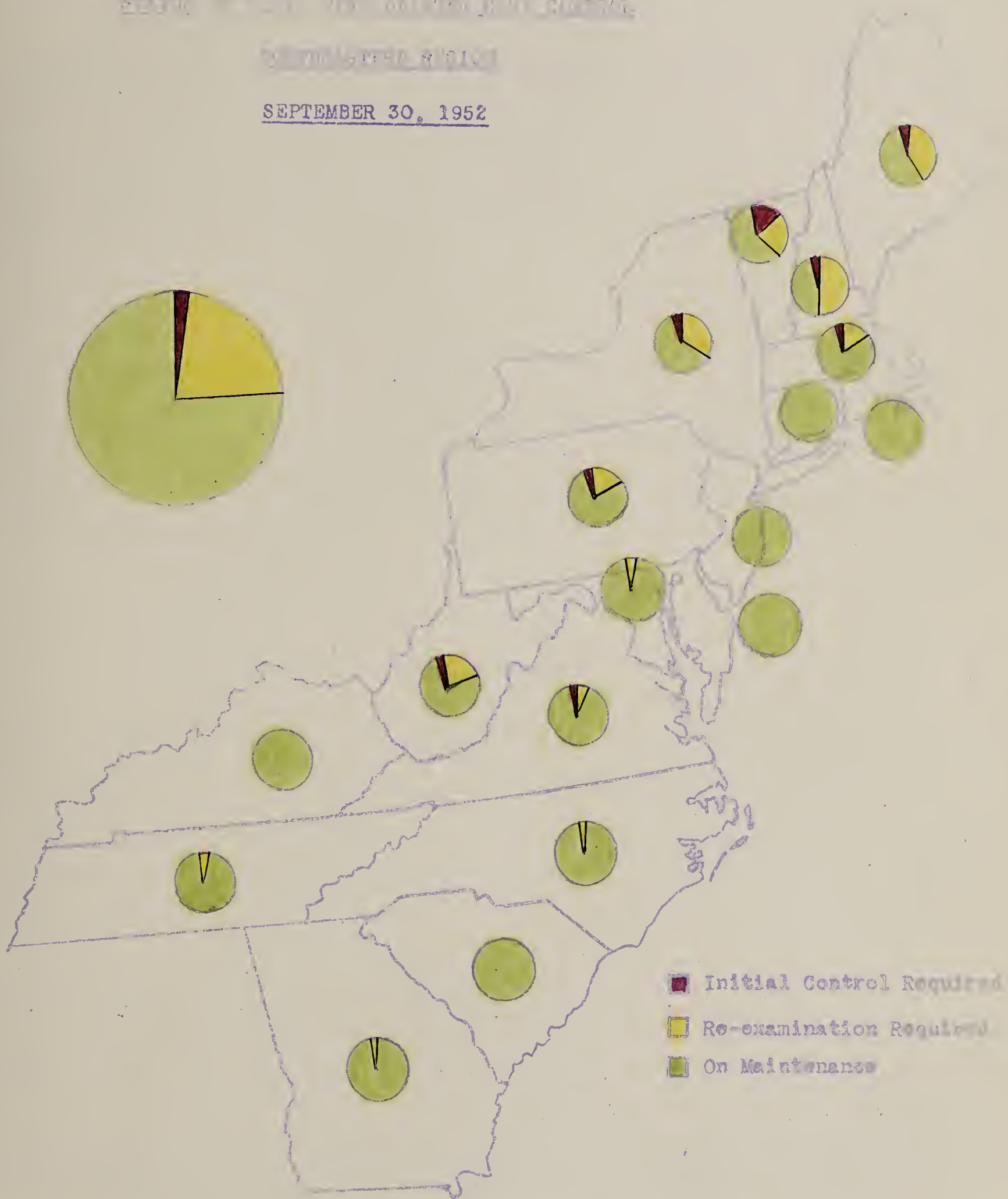


Table 2 - Ribes Eradication Work By Agencies During 1952

First Working

Agency	Acreage Worked	Total Ribes Destroyed	Total Man Days	Ribes Per Acre (3)	Acres Per Man Day (3)
State and Private	125,722 (1)	801,962	5,734	6.7	21.0
National Forests	9,250 (2)	35,305	893	6.1	6.4
All Projects	134,972	837,267	6,627	6.6	19.0

Second Working

State and Private	427,171	1,421,623	11,699	3.3	36.5
National Forests	17,053	133,424	3,344	7.8	5.1
All Projects	444,224	1,555,047	15,043	3.5	29.5

Other Workings

State and Private	407,163	879,855	9,498	2.2	42.9
National Forests	20,715	74,253	3,362	3.6	6.2
National Parks	212	1,763	93	8.3	2.3
All Projects	428,090	955,871	12,953	2.2	33.0

All Workings

State and Private	960,056	3,103,440	26,931	3.3	35.4
National Forests	47,018	242,982	7,599	5.6	5.7
National Parks	212	1,763	93	8.3	2.3
All Projects	1,007,286 (1) (2)	3,348,185	34,623	3.4	28.8

(1) Includes 5,569 acres without ribes.
(2) Includes 3,491 acres without ribes.
(3) Based on ribes bearing acres only.

Table 3 - Total Federal and State Cooperative Expenditures for All Blister Rust Control Activities - Calendar Year 1952 - Region

State	Federal Funds				Total State Cooperative	Grand Total All Funds
	Total B.E. & P.Q.	Forest Service	Park Service	Total Federal		
Maine	$35,616	$ 794	-	$ 36,410	$ 33,869	$ 70,279
N. H.	50,604	267	-	50,871	54,191	105,062
Vt.	24,615	423	-	25,038	11,805	36,843
Mass.	19,865	-	-	19,865	12,015	31,880
R. I.	200	-	-	200	1,773	1,973
Conn.	7,069	-	-	7,069	12,534	19,603
N. Y.	79,298	-	-	79,298	155,439	234,737
Penna.	23,149	711	-	23,860	22,212	46,072
Md.	703	-	-	703	339	1,042
No. Car.	1,762	-	6,479	8,241	450	8,691
Tenn.	6,822	724	-	7,546	857	8,403
Va.	22,181	64,584	3,975	90,740	6,307	97,047
W. Va.	17,838	9,149	-	26,987	6,190	33,177
Total	$289,722	$ 76,652	$ 10,454	$ 376,828	$ 317,981	$ 694,809

LEADERSHIP, COORDINATION AND TECHNICAL DIRECTION

The Bureau is responsible for the leadership, coordination and technical direction of the program. During 1952 this related to cooperative control work on state and private lands in all states, except New Jersey, Delaware, Georgia, Kentucky and South Carolina. It included also, work on National Forests in Maine, New Hampshire, Vermont, Pennsylvania, Virginia and West Virginia, and on National Parks in Virginia.

The regional project office in Greenfield, Massachusetts, provides the over-all planning and coordinates the control activities into a uniform program. This involves the use of federal, state, county, town, city and private funds in a balanced operation to insure the performance of control work where, and when needed. In accordance with a cooperative agreement with each state, the services of technical personnel are provided by the Bureau to organize and supervise the work. In each state, the official of the department or division responsible for blister rust control, has nominal charge of the program and is responsible for the formulation of state policy and the enforcement of state laws and regulations. In some instances the states furnish office space and other facilities. Through state authority, cooperation is extended to counties, cities, towns, organizations and individuals. Work on federal lands is administered by the Bureau under agreement with the U. S. Forest Service and the National Park Service.

Organization and Personnel

Continued progress occurred during the year in making adjustments necessitated by the regional reorganization of 1950 and 1951. The Southern Appalachian Area was divided into three districts with a leader in charge of each. District I includes North Carolina, Tennessee, Georgia and South Carolina; District II, Virginia; and District III, West Virginia and Kentucky. In the two latter districts, where most of the control work is involved, each leader is assisted by two control aids, each of whom is responsible for control work in specified counties. Each of these leaders is not only responsible for the general supervision of the work performed by his control aids, but also directs control operations in an assigned number of counties.

Mr. Henry E. Yost, who had served as project leader (GS-12) in the Southern Appalachian States since 1949 was transferred to the Golden Nematode Project at Hicksville, New York. The Southern Appalachian States were reclassified as an area and Mr. John R. George was assigned as area leader (GS-11). Two Southern Appalachian employees (GS-5) were promoted to district leader positions (GS-7) and three supervisors (GS-4) to control aids (GS-5). One supervisor (GS-5) working independently, but with less responsibilities than a GS-7 district leader, was assigned as a district leader (GS-6). The George Washington National Forest assigned Mr. Glenn E. Smith, forester, to blister rust control and timber stand improvement work early in the year. It is his responsibility to correlate blister rust control activities with forest management plans. This assignment has been extremely helpful to the blister rust control organization and will result in considerable expansion of white pine areas on the forest.

During July 1952, Mr. William Clave was promoted from a GS-11 position of area leader in New York and Pennsylvania to assistant project leader (GS-12) at Greenfield, Mass. Mr. Willis C. Kurtz (GS-11) was transferred from the Gypsy Moth Control Project to replace Mr. Clave as area leader. A clerk-stenographer vacancy (GS-3) was also filled at the project office. Two GS-5 supervisors, one in Connecticut and the other in Pennsylvania, working independently but with limited responsibilities were promoted to district leader positions (GS-6).

The headquarters of District Leader Conner were changed from East Jaffrey to Keene, New Hampshire. He now has office space in a rented building with PMA and SCS. Arrangements were also made for a gypsy moth quarantine inspector to share office space with District Leader Curtis in the County Farm Bureau office at Rochester, New Hampshire. With the reduction in office force at Harrisonburg, Virginia, the large space provided in the Federal Building for blister rust control was no longer needed. Through mutual agreement, one large room was made available to the Forest Service. They in turn assigned a smaller office for Mr. George.

The 1952 session of the Virginia Legislature enacted a Forest Insect and Disease Bill which transferred administration of the blister rust program from the State Entomologist in the Department of Agriculture and Immigration to the State Forester in the Department of Conservation and Development. A Division of Forest Insect and Disease Investigations has been established in the Virginia Forest Service as a result of this act. The Division has as its chief, Dr. George H. Plumb, formerly with the Connecticut Agricultural Station at New Haven. The State Entomologist continues to enforce quarantines. Similar action was also taken by the Massachusetts Legislature transferring blister rust control from the Department of Agriculture to the Department of Conservation effective July 1, 1952.

The increasing concern of cooperators about damage caused by insects and diseases was evidenced by their interest in legislation that would permit them to take action to curb outbreaks. North Carolina and West Virginia studied the procedures taken by other states in forest pest control and attempted to determine how these would apply to their problems.

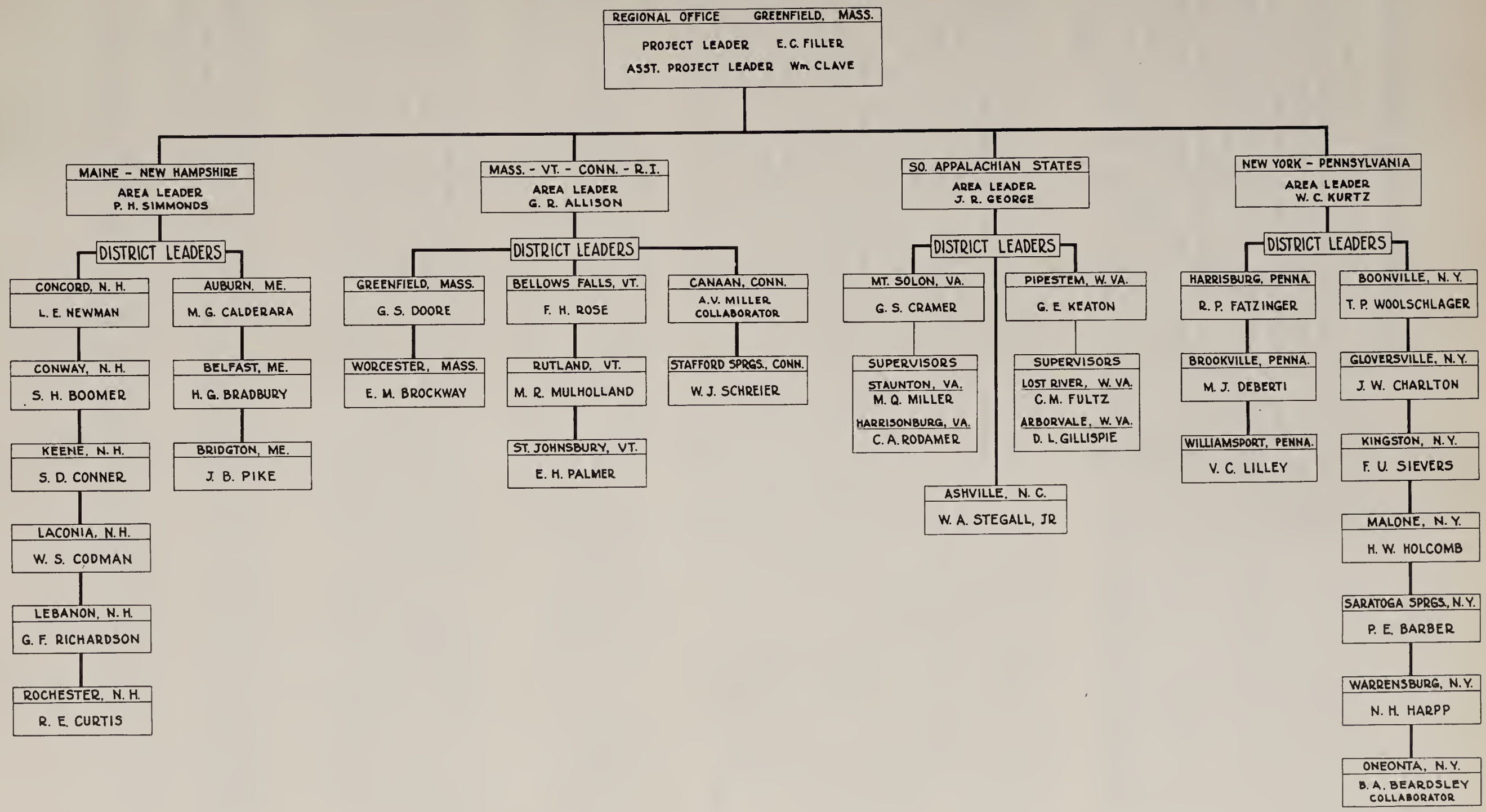
Mr. E. W. Williams, of the Division of Personnel, made a study of organization and job classifications of appointees on the project in the region. As a result he rewrote the job descriptions and recommended a few changes in grades which were later adopted. Mesdames Bushong and Miller of the Division of Administrative Services reviewed the filing system at the project office and aided in the preparation of a new file manual.

Mr. Harold Hair, special investigator for the House Subappropriations Committee visited the blister rust control project office on September 8 and 10. He conferred with the project leaders, was shown blister rust films, and observed field conditions and district organization in Warren County, New York.

The names and assignments of the permanent personnel in the region as of December 31, 1952 are shown in Chart II.

CHART II

PERMANENT BLISTER RUST CONTROL PERSONNEL IN NORTHEASTERN REGION - DECEMBER 31, 1952



Informational and Service Activities

Informational and service work was carried on as heretofore by the area and district leaders to keep federal, state and local agencies and the general public fully informed about the disease, the importance of its control, the progress made toward attaining control, and to secure and maintain cooperative participation in the control program. This type of leadership activity is especially significant in Maine, New Hampshire, Vermont and Connecticut where towns assist in financing control work and in New York where counties add their financial support. The importance of this assistance is indicated by the fact that cities, towns, counties and individuals provided 29.7% of the cooperative money in 1952. These funds added to the state appropriations account for 52.3% of all cooperative and Bureau money expended for the program in 1952.

From November 1, 1951 through September 30, 1952 the leader personnel participated in 264 meetings with an attendance of 17,120 persons. In addition, meetings included participation in the proceedings of Forest Practice Boards, Pest Control Committees, Soil Conservation District Committees, and State and County Agricultural Mobilization Committees. There were 19 radio talks, 1 televised talk, and 182 items prepared for local publication. In addition, 61 exhibits or demonstrations were placed at fairs or sectional or national meetings. The latter included the Virginia Nurserymen's Association and the Southern Chapter of the National Shade Tree Conference at Richmond, Virginia, and the joint meeting of the American Forestry Association and the North Carolina Forestry Association at Asheville. Instruction and demonstrations to students at the various forestry schools in the region continued with enthusiasm and profit. The motion pictures continued to be an important adjunct to successful informational work. There were 116 showings of blister rust films to an aggregate audience of 13,938 persons.

Service activities included 3,486 initial interviews, 2,392 follow-up calls, and instructions given to 1,703 persons. Contacts, as heretofore, were made with practicing foresters - federal, state, county, farm, extension and consulting - to enable them to more readily identify the disease, recognize the importance of blister rust control and salvaging of infected pines, and adopt cutting practices to keep ribes suppressed.

The informational and service activities resulted in 225 towns in Maine, New Hampshire and Vermont appropriating a record total of $70,965 for control work during 1952. In New York 19 counties appropriated $23,125. In addition, 28 individual owners in the Northeastern States contributed $3,370 for wild ribes eradication work on their lands, and hundreds of other owners of cultivated ribes permitted their bushes to be destroyed without compensation. For the fiscal year 1953, state and local cooperation in the region totals $366,210.

A detailed record of informational and service activities during 1952 are shown in Table 4. An accumulative record of such activites in the Northeastern States only for the period 1922-1951 will be found in Table 32 of the 1951 annual report.

A record of local cooperation during 1952 is provided in Table 5 and accumulative totals for the period 1918-1952 are shown in Table 6.

Table 4 - Informational and Service Activities of Blister Rust Control Leaders During 1952 - Northeastern Region

Informational Activities

State	Meetings Addressed		No. Radio Talks	No. Items Published	No. Demonstrations Placed
	No.	Attendance			
Me.	20	833	-	15	7
N. H.	61	3,367	6	67	22
Vt.	33	966	-	18	6
Mass.	18	2,822	12	11	2
R. I.	1	6	-	-	2
Conn.	6	91	-	-	3
N. Y.	83	7,392	-	52	9
Pa.	5	250	-	7	5
N. Car.	11	349	1	1	-
Tenn.	1	6	-	-	-
Va.	12	631	-	-	5
W. Va.	13	407	-	11	4
Total	264	17,120	19	182	65

Service Activities

State	No. Initial Interviews	No. Follow-up Calls	No. Individuals Instructed in Field
Me.	943	608	723
N. H.	591	691	302
Vt.	344	486	86
Mass.	853	128	53
R. I.	29	10	10
Conn.	114	54	86
N. Y.	869	814	706
Pa.	153	22	230
	(Data lacking for So. Appalachian Area)		
Total	3,896	2,813	2,196

Table 5 - Local Cooperation on Blister Rust Control Work During 1952

State	No. of Cooperators			Amount Expended			
	Individuals	Towns	Counties	Individuals	Towns	Counties	Total
Maine	-	67	-	-	$18,831	-	$18,831
N. H.	5	117	-	$1,042	42,118	-	43,160
Vt.	5	33	-	225	6,207	-	6,432
Mass.	14	1	-	1,482	128	-	1,610
Conn.	3	3	-	586	1,386	-	1,972
N. Y.	1	-	19	35	-	$22,505	22,540
All States	28	221	19	$3,370	$68,670	$22,505	$94,545

Table 6 - Local Cooperation on Blister Rust Control Work
1918-1952 Inclusive

State	Individual Cooperation		Town Cooperation			County Cooperation	
	No. Cooperators	Amount Spent by Individual Cooperator	No. Towns		Amount Town Money Expended	No. County Appropriations or Allotments	Amount Spent by Counties
			Appropriations	Contributions			
Maine	11,131	$ 86,098	1,300	20	$ 232,363	-	-
N. H.	700	50,822	2,201	20	689,079	6	$ 1,724
Vt.	2,382	77,316	300	64	79,759	-	-
Mass.	21,961	119,009	5	65	26,425	-	-
R. I.	8	581	-	-	-	-	-
Conn.	526	12,520	157	51	40,588	-	-
N. Y.	5,990	177,157	29	3	9,423	188	218,580
Penna.	303	2,273	-	-	-	-	-
Va.	1	276	-	-	-	-	-
W. Va.	1	358	-	-	-	-	-
Total	43,003	$526,410	3,992	223	$1,077,637	194	$220,304

Publications and Reports

See Part A - Summary of this report for a complete listing of publications prepared during 1952.

Special statements were also prepared on various subjects such as: analysis of leadership costs; blister rust damage; analysis of recommendations made by Secretary's Study Group; blister rust problem, status of control and future needs in Massachusetts; responsibilities and duties of project leaders; job descriptions; work plans; budgets; purchases, etc.

Cooperation with Other gencies

The blister rust control leaders in New England were given instructions and materials for assisting in gypsy moth quarantine enforcement. These men made inspections of small local shipments and issued certificates when they could perform such duties more conveniently than the regular quarantine inspectors headquartered at other locations. Federal Quarantine 63 was revised during the year to permit shipment of white pines without restriction (except when visibly infected with blister rust) into Kentucky, Tennessee, Georgia and South Carolina.

Assistant Project Leader Clave spent a week in Canada conferring with officials of the Forest Pathology Laboratory at Fredericton, New Brunswick, and inspecting a blister rust control demonstration area in Nova Scotia. The trip proved mutually helpful to those concerned. In both New Brunswick and Nova Scotia dead and dying pines as a result of blister rust are quite obvious. Later Mr. Clave attended a wage board conference in Washington. Mr. Glenn R. Allison, area leader, spent the first two weeks of December attending an administrative management course presented by the U. S. Department of Agriculture at Atlanta, Georgia.

Mr. C. C. Perry, control specialist, who has been preparing various blister rust reports for publication was temporarily transferred to Gypsy Moth Control from September 1 to December 31, 1952 to assist on a special survey project. During August the West Virginia Department of Agriculture and the Forestry Division of the Conservation Commission decided to do some experimental control work on oak wilt. They inquired regarding the availability of any blister rust field supervisors in that state for the assignment. Control Aid D. L. Gillispie was made available for seven weeks.

Close cooperation is maintained with managing officials of the U. S. Forest Service and the National Park Service.

Control Area Examination and Mapping Work

Control area examination is designed to make certain that pine conditions meet quality and stocking standards, to establish proper protection zone widths according to approved standards, and to locate areas where logging, fire or wind have resulted in a menacing regrowth of ribes. Areas where pine meets standards warranting protection are mapped or remapped. During 1952, 5,390 man days were devoted to this dual activity which compares with the figure of 4,094 man days in 1951. The 736,259 acres mapped represents an increase of 137,016 acres or 22.9%. The man-day records are not segregated into time devoted to examination and that involved in mapping. If, however, the acreages in the two activities are combined, the man-day production rate in 1952 amounted to 455.6 acres as compared with a figure of 469.9 in 1951.

The employment of 22 full time state or federal workers in New York, 5 in New Hampshire, 3 in Pennsylvania, and 1 in Connecticut was beneficial in speeding up control area examination and mapping in these states. A similar plan was followed in Maine, Massachusetts and Vermont, where each district leader had the assistance of a mapper in April and from October to December. In Maine the old 2X maps are being replaced by block maps based on aerial photographs. A special effort was made in New Hampshire to eliminate some of the details heretofore recorded on control area maps. In Pennsylvania, a revised mapping program with emphasis on the discontinuance of mature stands of pine and sub-standard areas together with a decrease in widths of protection zones resulted in a 25% to 75% reduction in control acreage in some sections.

In Westchester County, New York, Mr. Sievers examined 22,000 acres of control area using a state airplane and pilot. As a result 6,200 acres were discontinued from the control area because of insufficient pine to meet established standards. A total of 15,800 acres will be examined on the ground and detail mapped. Protection zones will be reduced considerably. The aerial survey required only 3¼ hours including flying time to and from airport. One control area of 150 acres that was discontinued would have taken a full day to examine by car and on foot, and also required the use of a boat. Mr. Barber also examined control areas from the air in Columbia County. In 1½ hours of flying, he examined areas which would have taken two weeks to cover on foot.

About 90% of the control area in the region has been detail mapped. A large part of the remaining portion will not need such mapping since the location and extent of the areas are definitely known or no maintenance workings will be required because of the absence or scarcity of ribes when initially worked. There are, however, some places in the region, especially in New Hampshire, where examinations from the air would be very helpful. Such methods will be used where practicable and planes are available. The helicopter has many advantages over the standard type of plane for such work.

The net reduction in total control area in 1952 was 271,501 acres with a net reduction of 65,418 acres in pine area.

The results of examination and mapping work in 1952 are summarized in Table 7. The accumulative results in the Northeastern States from 1918-1951 were recorded in Table 34 in the 1951 annual report.

Expenditures

Expenditures for Leadership, Coordination and Technical Direction (WA-14) are included in Table 22 in the appendix.

Table 7 - Control Area Examination and Mapping Work During 1932

State	Acreage Detailed Mapped			Additional Acreage Examined But Not Mapped			Total Man Days
	Initial Mapping	Re-mapping	Total	Inside Control Area	Outside Control Area	Total	
Maine	20,258	53,920	74,178	42,002	173,205	215,207	568
N. H.	86,085	36,729	122,814	108,838	54,923	163,761	825
Vt.	3,852	5,990	9,842	33,899	76,350	110,249	132
Mass.	10,355	86,116	96,471	63,290	237,119	300,409	182
R. I.	-	13,232	13,232	-	16,141	16,141	131
Conn.	-	48,875	48,875	-	358,601	358,601	226
N. Y.	39,868	211,713	251,581	183,263	179,079	362,342	1,857
Penna.	2,114	29,946	32,060	24,755	1,660	26,415	287
N. Car.	-	2,655	2,655	1,975	-	1,975	347
Tenn.	-	680	680	4,155	-	4,155	71
Va.	-	36,112	36,112	44,767	69,500	114,267	377
W. Va.	-	47,759	47,759	37,541	8,500	46,041	387
Total	162,532	573,727	736,259	544,485	1,175,078	1,719,563	5,390

COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED LANDS

The Bureau of Entomology and Plant Quarantine is responsible for over-all project planning and expends money appropriated by Congress under the provisions of the Lea Act for control work in cooperation with the states. These federal funds are used in participation with states, counties, cities, towns, associations and individual pine owners. Nearly 85% of the white pine in the control area is on state and privately-owned lands.

State and Local Cooperative Expenditures

State funds were appropriated specifically for blister rust control in 1952 in Maine, New Hampshire, Massachusetts, Connecticut, New York and West Virginia; while in Vermont, Rhode Island, Pennsylvania, Virginia and West Virginia, allotments for the work were made from regular state appropriations for either general forestry or pest control projects. Additional funds were also allotted from other state appropriations in Massachusetts, Connecticut and New York. Total state expenditures and contributed services (Direct and Indirect Aid) during 1952 amounted to $223,436 compared with $232,037 in 1951.

Town cooperation in Maine, New Hampshire, Vermont, Massachusetts and Connecticut involved expenditures of $68,670 for cooperative ribes eradication work by 221 towns as compared with $54,699 by 183 towns in 1951.

County cooperation was restricted to New York where 19 counties spent $22,505 for control work. This compares with $21,862 in 1951.

Individuals expended $3,370 for specific control work on their holdings. These expenditures were made by 28 owners.

A summarization of the individual, town and county cooperation by states is in Table 5.

During 1952 total state and cooperative expenditures and contributed services for work on state and privately-owned lands amounted to $317,981, compared with $311,295 in 1951.

A record of accumulative local cooperation from 1918 to 1952, inclusive, is shown in Table 6.

Accomplishments in Ribes Eradication on State and Private Lands

During the 1952 field season 3,103,440 ribes (wild and cultivated) were removed from 960,056 acres by 26,931 man days of labor.

First work accounted for 13.1% of the total acreage worked, second work 44.5%, and other workings (including maintenance workings) 42.4%.

Although the average number of ribes per acre was low, it results from the fact that there was a large acreage with low ribes population intermingled with denser populations in concentrations. Such a situation serves to reduce the average.

The production rate (acres per man day) amounted to 21.9 for first work, 36.5 for second work, 42.9 for other work, and 35.6 for all workings.

The details of the results of eradication work on state and private lands are contained in Table 8.

Table 8 - Ribes Eradication Work on State and Private Lands During 1952

State	First Working			Second Working			Other Working			All Workings			Per Acre Values (2)		
	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Ribes	Man Days	Acres Per Man Day
Maine	9,029	95,749	453	66,443	209,183	1,866	82,433	167,867	2,073	157,905	472,799	4,392	3.0	.028	36.0
N. H.	17,376	161,922	669	191,390	505,046	3,481	64,698	136,589	1,084	273,464	803,557	5,234	2.9	.019	52.2
Vt.	23,870	102,688	890	11,930	25,865	332	5,968	19,795	194	41,768	148,348	1,416	3.6	.034	29.5
Mass.	17,064	24,969	246	43,175	73,124	656	20,988	26,979	243	81,227	125,072	1,145	1.5	.014	70.9
Conn.	-	-	-	-	-	-	7,335	20,368	107	7,335	20,368	107	2.8	.015	68.6
N. Y.	37,286	328,389	1,773	98,871	494,309	3,873	214,629	460,105	4,766	350,786	1,282,803	10,412	3.7	.030	33.7
Penna.	10,436	47,793	841	9,994	52,062	598	6,931	13,042	353	27,361	112,897	1,792	4.1	.065	15.3
Md.	-	-	-	553	13,697	96	-	-	-	553	13,697	96	24.8	.174	5.8
Penn.	-	-	-	368	6,860	60	516	4,611	35	884	11,471	95	13.0	.107	9.3
Va.	(1) 10,446	37,067	826	817	3,351	138	1,393	23,010	332	(1) 12,656	63,428	1,296	8.9	.183	5.5
W. Va.	215	3,385	36	3,630	38,126	599	2,272	7,489	311	6,117	49,000	946	8.0	.155	6.5
Total	(1) 125,722	801,962	5,734	427,171	1,421,623	11,699	407,163	879,855	9,498	960,056	3,103,440	26,931	3.2	.028	35.4

(1) Includes 5,569 acres without ribes. (2) Based on ribes bearing acres only.

Maintenance Workings

All ribes eradication work in Connecticut in 1952 was in the maintenance working category. In the other states the amount is still relatively small ranging from none in Maryland and Tennessee to 10.2% in New York, with a figure of 7.7% for the region. The results of maintenance workings are shown in Table 20 in the Appendix.

Accumulative data from 1946-1952, inclusive, are given in Table 21 in the Appendix.

Comparison of 1951 and 1952 Ribes Eradication Results

A comparison of the results of 1952 ribes eradication work with that of 1951 shows that with a reduction of 3.0% in available man days, there was an increase of 1.6% in acreage covered. There was an increase of 6.9% in the number of ribes destroyed.

So many factors enter into production rates it is futile to compare rates in the several states. A comparison, however, based on the large unit of acreage represented by the aggregate volume of work is a reasonably satisfactory basis to determine trends. For the region, production rates are shown below for 1950 and 1951 by numerical working:

Production Rate (Acres Worked Per Man Day)

	First Work	Second Work	Other Work	All Work
1951.....	16.4	27.2	37.1	27.3
1952.....	20.4	29.5	33.0	29.4

These figures indicate that the greater use of scouts where competent men are available and the use of smaller crew units is resulting in a commendable increase in production rates.

Checking Ribes Eradication Work

Three procedures are used in checking ribes eradication in the region. These are (1) observations by the foreman as he works with the field unit and virtually examines the ground covered by the unit, (2) rework of a portion of a strip by the field unit itself, and (3) measured general checks of worked area by the district leader or checker. In addition, supervisory personnel make general inspection of worked areas and observe the functioning of the field units to make certain that prop r procedures are being used.

Measured checking, while a highly desirable type, is time-consuming. Where leaders have assistants for the purpose as in New York, a substantial number of such checks can be made. On the other hand, where the leaders do not have assistance, reliance has to be placed in great measure on the supervisory type. This will be particularly the case as maintenance work increases and individual work areas become numerous and in scattered units of smaller acreage.

Chemical Eradication of Ribes

During 1952 there was a considerable increase in the use of 2,4,5-T in spraying concentrations of ribes. In New York, 1,881 gallons of solution at the

rate of 3/4 of a gallon to 100 gallons of water were applied to 113 plots comprising 25½ acres of ribes concentrations and containing over 1,100,000 such plants. The treated plots contained wild black and skunk currants and gooseberries, also cultivated red and flowering currants. Good results were noted especially with wild black and skunk currants. In some instances good results were obtained on large pasture gooseberries.

District Leader Holcomb checked this season 80% of the plots sprayed in his territory during 1951. All plots containing red and skunk currants showed 100% mortality, except one where poor application of the spray occurred. Gooseberries, flowering currants, and escaped reds showed a 98% kill. Examination this year of plots sprayed in 1951 in Charlton's district indicated excellent kill in four plots with from zero to a very few sprouts or seedlings; 7 plots with a good kill but with some missed bushes, sprouts or seedlings; and 5 plots with a fair to poor kill. Most of the sprouting was from bushes which had layered, or tall spindly bushes with only a few leaves. In general the results of spraying wild black currants were better than hand pulling. Results with gooseberries were not satisfactory.

Most of the district leaders in northern New England also used 2,4,5-T on ribes concentrations. Examination of skunk currant areas sprayed the previous season in the Auburn, Maine, district showed practically 100% kill. During 1952, the use of 2,4,5-T was increased in Curtis' district in New Hampshire where 19.4 acres were treated for eradication of over 86,000 ribes. An average of 24 gallons of spray were used per acre. The treatment was applied to 28 plots in 6 towns. Mr. Boomer also reported about 3/4 of an acre treated with spray on concentrations estimated to contain about 15,000 ribes per acre. Efforts will be made during 1953 to increase the use of chemical spray treatment where practicable in all districts. Salt and borax also continued to be used in most districts to eradicate decapitated bushes growing in stony sites where hand methods were not effective.

Ribes Eradication Field Units

The use of ribes eradication field units of smaller size conforming with control needs was again emphasized during 1952. Where practicable, the drag line method of searching for ribes was used effectively. The urgency of a few full time skilled workers continues to be an important requisite.

Nursery Sanitation Work During 1952

Sanitation work was performed in the environs of 6 nurseries in Connecticut and New York. A total of 68 man days was spent examining 3,589 acres and 394 wild ribes were located and destroyed.

A list of nurseries maintaining sanitation zones is given in Table 9.

Table 10 shows the present status of such activities.

Table 9 - List of Nurseries Maintaining Sanitation Zones in Northeastern Region

December 31, 1952

	Acreage of Sanitation Zone
Maine	
Western Maine Nursery - Fryeburg, Maine	311
State Nursery - Orono, Maine	162
	473
New Hampshire	
Keene Forestry Associates - Keene, N. H.	250
State Nursery - Boscawen, N. H.	499
	749
Vermont	
State Nursery - Essex Junction, Vt.	333
Massachusetts	
Department of Conservation Nursery - Amherst, Mass.	225
" " " " - Bridgewater, Mass.	100
" " " " - Clinton, Mass.	150
" " " " - Erving, Mass.	50
Kelsey Highlands Nursery - Boxford, Mass.	900
Weston Nursery - Weston, Mass.	60
	1,485
Connecticut	
Northeastern Forestry Company - Cheshire, Conn.	356
State Nursery - Barkhamsted, Conn.	492
Great Pond Nursery - Simsbury, Conn.	188
	1,036
New York	
State Nursery - Saratoga Springs, N. Y. (old portion	705
(new portion	1,605
State Nursery - Lowville, N. Y.	1,150
N. Y. State College of Forestry Nursery - Syracuse, N. Y.	230
State Nursery (Division of Fish and Game) - Painted Post, N. Y.	206
Soil Conservation Service Nursery - Big Flats, N. Y.	470
	4,366
New Jersey	
State Nursery - Washington Crossing, N. J.	600
Pennsylvania	
Clearfield State Nursery - Clearfield, Penna.	370
Greenwood State Nursery - Petersburg, Penna.	411
Mt. Alto State Nursery - Mt. Alto, Penna.	366
Rockview State Nursery - Pleasant Gap, Penna.	354
Howard State Nursery - Mt. Eagle, Penna.	215
Andorra Nursery - Chester Hill, Penna.	1,065
Fairview Nursery - Fairview, Penna.	559
Doyle Nursery - Seven Stars, Penna.	581
	3,921

Table 9 - List of Nurseries Maintaining Sanitation Zones in Northeastern Region December 31, 1952 (Continued)

	Acreage of Sanitation Zone
Maryland	
State Forest Nursery - Harmons, Md.	-
North Carolina	
N. C. State Forest Nursery - Penrose, N. C.	100
Tennessee	
TVA Nursery - Clinton, Tenn.	300
Virginia	
State Forest Nursery - Charlottesville, Va.	200
W. Virginia	
State Forest Nursery - LeSage, W. Va.	162
Parsons Nursery - Parsons, W. Va.	651
	813
All States	
34 Nurseries	14,376

Table 10 - Status of Nursery Sanitation Work, December 31, 1952

State	Nurseries Where Protection Established and Being Maintained					No. Nurseries Protected During 1952	No. Additional Nurseries Which Established Zones But Now Abandoned
	Number				Acreage of Control Areas		
	Federal	State	Private	Total			
Me.	-	1	1	2	473	-	5
N. H.	-	1	1	2	749	-	1
Vt.	-	1	-	1	333	-	-
Mass.	-	4	2	6	1,485	-	13
R. I.	-	-	-	-	-	-	6
Conn.	-	1	2	3	1,036	3	18
N. Y.	1	4	-	5	4,366	3	4
N. J.	-	1	-	1	600	-	1
Penna.	-	5	3	8	3,921	-	6
Del.	-	-	-	-	-	-	5
Ga.	-	-	-	-	-	-	1
Ky.	-	-	-	-	-	-	1
Md.	-	1	-	1	-	-	13
N. C.	-	1	-	1	100	-	19
Tenn.	1	-	-	1	300	-	2
Va.	-	1	-	1	200	-	9
W. Va.	-	2	-	2	813	-	-
All States	2	23	11	34	14,376	6	104

Blister Rust Canker Elimination Work During 1952

Blister rust canker elimination during the current year was restricted to state lands in 8 towns in New York where the pines had high aesthetic value. A total of 16,480 white pines was examined and 208 fatally diseased trees were cut down. In addition, 611 branch infections and 30 stem cankers were removed from 412 other pines. A total of 100 man days was used in canker elimination work.

The record of accumulated data from 1932-1951 inclusive was presented in Table 38 in the 1951 annual report.

Status of Control Work on State and Private Lands

As of September 30, 1952, the control area on state and private lands amounted to 16,063,951 acres of which 6,164,818 acres represents stands of white pine meeting standards warranting continued control. First working has been performed on 97.6% of the control area and second working on 44.7%. The 11,801,182 acres on maintenance amounts to 73.5% of the total and includes all of the control area in Connecticut, Rhode Island, New Jersey, Delaware, Kentucky and South Carolina. The 1952 net increase in area on maintenance was 682,703 acres or 5.5%.

Detailed mapping has been completed on 88.8% of the control area but many of the original maps are rather obsolete because of changes resulting from hurricanes, large fires, and extensive logging. Control area mapping and remapping during 1952 resulted in further reductions in the control area and white pine acreages. The net control area dropped 275,966 acres and the net pine area was reduced by 65,890 acres.

There was an increase of 1.7% in area detailed mapped, a 0.5% increase in the area worked once, 2.3% increase in area worked twice and an appreciable increase of 5.5% in the acreage in the maintenance classification. The greatest change in the item of maintenance was in New York with an increase of 11.9%, then New Hampshire with 9.4%, Pennsylvania with 8.2%, Maine with 6.4%, Vermont with 6.2% and Massachusetts 4.8%.

The present status of control work in each state is shown in Table 11.

Table 11 - Status of Blister Rust Control Work on State and Private Lands
September 30, 1952

State	Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked				Acreage on Maintenance	Percentage of Net Control Area			
				Pre-maintenance Work			All Maintenance Work					
				First Work	Second Work	Other Working			Detail Mapped	Worked Once	Worked Twice	On Maintenance
Me.	2,309,070	900,924	2,149,266	2,174,172	1,423,931	344,134	48,405	1,233,884	93.1	94.2	61.7	53.4
N. H.	2,680,540	1,230,254	1,755,688	2,639,485	1,566,464	220,298	46,836	1,259,112	65.5	98.5	58.4	47.0
Vt.	731,117	171,264	723,749	618,347	222,809	41,592	10,196	454,120	99.0	84.6	30.5	62.1
Mass.	1,491,903	580,298	1,080,040	1,473,929	1,144,663	154,532	7,831	1,244,260	72.4	98.8	76.7	83.4
R. I.	145,483	62,563	131,535	145,483	139,095	34,068	85,580	145,483	90.4	100.0	95.6	100.0
Conn.	466,893	93,592	466,893	466,893	306,238	129,643	352,839	466,893	100.0	100.0	65.6	100.0
N. Y.	2,405,674	760,477	2,136,870	2,349,153	1,843,937	978,978	436,013	1,524,963	88.8	97.7	76.6	63.4
N. J.	16,742	3,771	-	16,742	1,417	-	-	16,742	-	100.0	8.5	100.0
Penna.	492,841	106,738	489,866	489,448	315,890	69,657	53,353	410,652	99.4	99.3	64.1	83.3
Del.	6,186	242	6,186	6,186	-	-	-	6,186	100.0	100.0	-	100.0
Md.	324,452	248,576	324,452	324,452	678	441	-	324,302	100.0	100.0	.2	99.9
Ky.	114,312	31,199	114,312	114,312	-	-	-	114,312	100.0	100.0	-	100.0
N. C.	163,590	70,550	163,590	163,590	16,986	27,378	-	152,227	100.0	100.0	10.4	93.1
S. C.	1,361,532	581,619	1,361,532	1,361,532	6,631	2,495	-	1,358,872	100.0	100.0	.5	99.8
Tenn.	77,008	45,398	77,008	77,008	25,935	-	-	77,008	100.0	100.0	33.7	100.0
Va.	1,068,275	461,565	1,068,275	1,068,275	13,196	5,235	-	1,050,433	100.0	100.0	1.2	98.3
W. Va.	1,527,243	554,228	1,527,243	1,502,430	35,969	10,425	685	1,443,632	100.0	98.4	2.4	94.5
All States	681,090	261,560	681,090	680,515	114,813	19,087	153	518,101	100.0	99.9	16.9	76.1
	16,063,951	6,164,818	14,257,595	15,671,952	7,178,652	2,037,963	1,041,891	11,801,182	88.8	97.6	44.7	73.5

In connection with control needs, the figure of 1,806,356 acres needing initial mapping emphasizes the fact that mapping is an important element in the work load of the project especially in view of the circumstance that re-mapping will be needed on that portion of the area on maintenance where ribes regenerate. As previously pointed out, the figure representing acreage in need of initial mapping is somewhat excessive, in that it includes substantial acreage in some states already on maintenance.

The acreage requiring first work has been reduced each year but with new acreages of reproduction reported in remapping activities, the figure of 391,999 acres is still sizeable. The largest acreages needing first work are in Maine where they represent 5.8% of the control area in the state. In Vermont, New Hampshire and Pennsylvania appreciable reductions in this item were made in 1952.

The major work load is represented by the 3,870,770 acres requiring rework and the need for the examination of the extensive areas in the maintenance classification in accordance with the ten-year examination-interval policy. An analysis of the results of recent examination work indicates that about 15% of the maintenance areas will require rework.

Data on control work needed are included in Table 12.

Table 12 - Control Work Needed on State and Private Lands
(As of September 30, 1952)

State	Total Acreage of Net Control Area	Acreage in Net Control Area in Need of			% Net Control Area in Need of		
		Initial Detail Mapping	Pre-Maintenance Work		Initial Detail Mapping	Pre-Maintenance Work	
			First Work	Rework		First Work	Rework
Me.	2,309,070	159,804	134,898	940,288	6.9	5.8	40.8
N. H.	2,680,540	924,852	41,055	1,380,373	34.5	1.5	51.5
Vt.	731,117	7,368	112,770	164,227	1.0	15.4	22.5
Mass.	1,491,903	411,863	17,974	229,669	27.6	1.2	15.4
R. I.	145,483	13,948	-	-	9.6	-	-
Conn.	466,893	-	-	-	-	-	-
N. Y.	2,405,674	268,804	56,521	824,190	11.2	2.3	34.3
N. J.	16,742	16,742	-	-	-	-	-
Penna.	492,841	2,975	3,393	78,796	.6	.7	16.0
Del.	6,186	-	-	-	-	-	-
Ga.	324,452	-	-	150	-	-	.1
Ky.	114,312	-	-	-	-	-	-
Md.	163,590	-	-	11,363	-	-	6.9
N. C.	1,361,532	-	-	2,660	-	-	.2
S. C.	77,008	-	-	-	-	-	-
Tenn.	1,068,275	-	-	17,842	-	-	1.7
Va.	1,527,243	-	24,813	58,798	-	1.6	3.9
W. Va.	681,090	-	575	162,414	-	.1	23.8
All States	16,063,951	1,806,356	391,999	3,870,770	11.2	2.4	24.1

Expenditures

State and local cooperative expenditures (direct and indirect aid) for work on state and private lands during 1952 totalled $317,981 compared with $311,295 in 1951 an increase of 2.1%. The following tabulation gives a comparison of such cooperative expenditures in each state during the last two years:

State and Local Cooperative Expenditures
for Work on State and Private Lands

State	1951	1952	Percentage Change
Maine	$ 24,816	$ 33,869	+ 36.5
N. H.	46,467	54,191	+ 16.6
Vt.	11,364	11,805	+ 3.9
Mass.	12,757	12,015	- 5.8
R. I.	1,988	1,773	- 10.8
Conn.	11,355	12,534	+ 10.4
N. Y.	160,436	155,439	- 3.1
Penna.	18,577	22,212	+ 19.6
Md.	1,296	339	- 73.8
No. Car.	2,807	450	- 84.0
Tenn.	2,483	857	- 65.5
Va.	12,973	6,307	- 51.4
W. Va.	3,976	6,190	+ 55.7
Total	$311,295	$317,981	+ 2.1

The above figures show substantial increases in Maine, New Hampshire, Pennsylvania and West Virginia and decreases in Maryland, North Carolina, Tennessee and Virginia. The amounts were practically the same each year in the other states.

The tabulation below shows a summary of federal, state and local expenditures on state and private lands during 1952.

State	Federal (WE) Funds	States and Local Cooperators (Dir. & Ind. Aid)	Total	% Total By Federal (WE) Funds	% Total By States and Local Cooperators
Maine	$ 14,605	$ 33,869	$ 48,474	30.1	69.9
N. H.	19,487	54,191	73,678	26.4	73.6
Vt.	5,355	11,805	17,160	31.2	68.8
Mass.	5,837	12,015	17,852	32.7	67.3
R. I.	-	1,773	1,773	-	100.0
Conn.	3,365	12,534	15,899	21.2	78.8
N. Y.	36,813	155,439	192,252	19.1	80.9
Penna.	4,479	22,212	26,691	16.8	83.2
Md.	294	339	633	46.4	53.6
No. Car.	150	450	600	25.0	75.0
Tenn.	1,158	857	2,015	57.5	42.5
Va.	7,327	6,307	13,634	53.7	46.3
W. Va.	4,320	6,190	10,510	41.1	58.9
Total	$103,190	$317,981	$421,171	24.5	75.5

As indicated in the previous tabulation, the expenditures by the states and their local cooperators greatly exceeded federal (WE) expenditures in all states except Tennessee and Virginia. For the entire region, the excess amounted to $214,790. In other words state and local expenditures represented 75.5% of the grand total.

The difference between expenditures by the Bureau and by the states and their cooperators was the greatest again in New York where the total of $155,439 was 322.2% greater than Bureau (WE) expenditures in that state and $52,249 (30.6%) in excess of the total Bureau (WE) expenditures for cooperative control work in the entire region.

All expenditures and contributed services for work or state and private lands are shown in Table 13.

Table 13 - Total Expenditures and Contributed Services for Work on State and Private Lands during 1952.

State	State and Local Cooperative Expenditures and Contributed Services									B.E. & P.Q. (WP-14)	Grand Total
	Cash Expenditures					Value of Contributed Services		State Indirect Aid	Total		
	State	Towns	Counties	Indiv.	Sub-Total	State	County Town & Indiv.				
Maine	$ 13,793	$18,831	-	-	$ 32,624	$ 825	-	$ 420	$ 33,869	$ 14,605	$48,474
N. H.	10,386	42,118	-	1,042	53,546	350	-	295	54,191	19,487	73,678
Vt.	4,107	6,207	-	225	10,539	736	-	530	11,805	5,355	17,160
Mass.	9,160	128	-	1,482	10,770	1,245	-	-	12,015	5,837	17,852
R. I.	1,413	-	-	-	1,413	150	-	210	1,773	-	1,773
Conn.	9,442	1,136	-	586	11,164	500	250	620	12,534	3,365	15,899
N. Y.	119,877	-	21,805	35	141,717	10,672	700	2,350	155,439	36,813	192,252
Penna.	20,537	-	-	-	20,537	900	-	775	22,212	4,479	26,691
Md.	339	-	-	-	339	-	-	-	339	294	633
No. Car.	-	-	-	-	-	-	-	450	450	150	600
Tenn.	532	-	-	-	532	50	-	275	857	1,158	2,015
Va.	5,832	-	-	-	5,832	125	-	350	6,307	7,327	13,634
W. Va.	5,615	-	-	-	5,615	175	-	400	6,190	4,320	10,510
All States	$ 201,033	$68,420	$ 21,805	$3,370	$ 294,628	$15,728	$950	$6,675	$ 317,981	$103,190	$421,171

BLISTER RUST CONTROL WORK ON NATIONAL FORESTS

There are three National Forests in the Northeastern States, namely White Mountain in New Hampshire and Maine, Green Mountain in Vermont, and Allegheny in Pennsylvania. In the Southern Appalachian Area, there is the George Washington in Virginia and West Virginia, the Jefferson in Virginia, Monongahela in West Virginia, Cumberland in Kentucky, Pisgah and Nantahala in North Carolina, Cherokee in Tennessee, Sumter in South Carolina and Chattahoochee in Georgia.

1952 Accomplishments in Ribes Eradication

Control work was performed on the White Mountain, Green Mountain, Allegheny, George Washington, Jefferson and Monongahela National Forests.

An aggregate area of 47,018 acres was covered of which 3,491 acres were classified as ribes-free. On the ribes-bearing area of 43,527 acres, 242,982 ribes were destroyed through the use of 7,599 man days of labor. The production rate was 6.2 acres per man day on ribes-bearing acreage. Details of the work by Forests are shown in Table 14.

Expenditure figures by Forests are shown below.

National Forest	Expenditures
White Mountain	$ 1,061
Green Mountain	423
Allegheny	711
Cherokee	724
George Washington	65,746
Jefferson	3,809
Monongahela	4,178
	$76,652

Status of Control

As of September 30, 1952, there were 1,775,514 acres in the net control area on the National Forests of which 1,013,592 acres represents white pine acreage. First work has been performed on 99.9% of the control area and 95.8% is on maintenance.

First work is still needed on only 439 acres in the George Washington. Rework is required on an aggregate area of 74,788 acres of which 73.2% is also on the George Washington.

Details relating to the status of control are shown in Table 15 and control work needed in Table 16.

Table 14 - Ribes Eradication Work on National Forests During 1952

National Forests	First Working			Second Working			Other Working			All Workings			Per Acre Values (2)		
	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Ribes	Man Days	Acres Per Man Day
White Mt.-Me.	-	-	-	1,385	7,084	76	161	384	10	1,546	7,468	86	4.8	.056	18.0
White Mt.-N.H.	40	1,605	4	-	-	-	1,025	3,601	20	1,065	5,206	24	4.9	.023	44.4
Green Mt.-Vt.	1,713	1,596	42	-	-	-	-	-	-	1,713	1,596	42	.9	.025	40.8
Allegheny-Pa.	-	-	-	320	360	17	590	1,605	55	910	1,965	72	2.2	.079	12.6
Geo.Wash.-Va.	7,497 (1)	32,104	847	14,853	97,529	3,143	12,362	31,970	2,295	34,712 (2)	161,603	6,285	5.2	.201	5.0
Geo.Wash.-W.Va.	-	-	-	270	1,371	39	2,757	11,878	440	3,027	13,249	479	4.4	.158	6.3
Jefferson-Va.	-	-	-	225	27,080	69	245	4,172	76	470	31,252	145	66.5	.309	3.2
Monongahela-W.Va.	-	-	-	-	-	-	3,575	20,643	466	3,575	20,643	466	5.8	.130	7.7
Tot.-Nat.Forest	9,250 (1)	35,305	893	17,053	133,424	3,344	20,715	74,253	3,362	47,018 (2)	242,982	7,599	5.6	.175	6.2

(1) Includes 3,491 acres without ribes. (2) Based on ribes bearing acres only.

Table 15 - Status of Ribes Eradication on National Forests
September 30, 1952

National Forest	Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped or Surveyed	Net Acreage Worked				Acreage on Maintenance	Percentage of Net Control Area			
				Pre-maintenance Work			All Maintenance Work		Detail Mapped or Surveyed	Worked Once	Worked Twice	On Maintenance
				First Work	Second Work	Other Work						
White Mountain	5,379	2,000	5,379	5,379	5,136	2,834	1,070	4,797	100.0	100.0	95.5	89.2
Green Mountain	2,286	541	2,226	2,286	115	-	-	907	97.4	100.0	5.0	39.7
Allegheny	4,085	957	4,085	4,085	3,135	1,241	170	2,660	100.0	100.0	76.7	65.1
George Washington	421,931	191,267	421,931	421,492	84,163	51,542	-	366,778	100.0	99.9	19.9	86.9
Jefferson	107,474	55,084	107,474	107,474	3,962	1,101	-	102,889	100.0	100.0	3.7	95.7
Monongahela	89,559	46,854	89,559	89,559	11,606	7,185	680	84,176	100.0	100.0	13.0	94.0
Cumberland	32,002	16,980	32,002	32,002	65	65	-	32,002	100.0	100.0	.1	100.0
Pisgah	161,752	92,697	161,752	161,752	2,943	1,780	-	158,539	100.0	100.0	1.8	98.0
Nantahala	62,709	42,138	62,709	62,709	7	-	-	62,702	100.0	100.0	.1	100.0
Cherokee	484,572	250,378	484,572	484,572	2,103	41	-	481,266	100.0	100.0	.4	99.3
Sumter	53,862	18,794	53,862	53,862	3,700	-	-	53,862	100.0	100.0	6.9	100.0
Chattahoochee	349,903	295,902	349,903	349,903	330	97	-	349,713	100.0	100.0	.1	99.9
Region Total	1,775,514	1,013,592	1,775,454	1,775,075	117,265	65,886	1,920	1,700,287	99.9	99.9	6.6	95.8

Table 16 - Control Work Needed on National Forests
(as of September 30, 1952)

National Forest	Total Acreage of Net Control Area	Acreage in Net Control Area in need of			Percentage of Net Control Area in need of		
		Detail Mapping or Survey	Pre-Maintenance Work		Detail Mapping or Survey	Pre-Maintenance Work	
			First Work	Rework		First Work	Rework
White Mountain	5,379	-	-	582	-	-	10.8
Green Mountain	2,286	60	-	1,379	2.6	-	60.3
Allegheny	4,085	-	-	1,425	-	-	34.9
Geo. Washington	421,931	-	439	54,714	-	.1	13.0
Jefferson	107,474	-	-	4,585	-	-	4.3
Monongahela	89,559	-	-	5,383	-	-	6.0
Cumberland	32,002	-	-	-	-	-	-
Pisgah	161,752	-	-	3,217	-	-	2.0
Nantahala	62,709	-	-	7	-	-	-
Cherokee	484,572	-	-	3,306	-	-	.7
Sumter	53,862	-	-	-	-	-	-
Chattahoochee	349,903	-	-	190	-	-	.1
Region	1,775,514	60	439	74,788	-	-	4.1

BLISTER RUST CONTROL ON NATIONAL PARKS

Cooperation with the Department of the Interior involves work on the Acadia National Park in Maine, the Shenandoah National Park in Virginia, the Blue Ridge Parkway in North Carolina and Virginia, and the Great Smoky National Park in North Carolina and Tennessee.

Examination and Survey Work

On the Great Smoky 2,655 acres were remapped, and on the Shenandoah 995 acres were remapped and an additional 1,195 acres were re-examined. A total of 385 man days was involved in this work.

1952 Accomplishments in Ribes Eradication

The only control work performed on National Parks was on the Shenandoah. A reworked area of 212 acres was cleared of 1,763 ribes as a result of 93 man days of labor. The production rate was 2.3 acres per man day.

Expenditure figures by Parks are shown below.

National Park	Expenditures
Great Smoky Mountain	$ 6,479
Shenandoah	3,975
Total	$10,454

Status of Control

As of September 30, 1952, there were 155,936 acres in the net control area in the National Parks, of which 79,958 acres are white pine. All first work has been completed. Second work had been performed on 12.0% and 94.4% is on maintenance.

There will be need for rework on 8,782 acres which represents only 5.6% of the net control area.

Details regarding status of control by Parks are shown in Table 17 and control work needed in Table 18.

Table 17 - Status of Ribes Eradication on National Parks
September 30, 1952

National Park	Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped or Surveyed	Net Acreage Worked				Acreage on Maintenance	Percentage of Net Control Area			
				Pre-maintenance Work			All Maintenance Work		Detail Mapped	Worked Once	Worked Twice	On Maintenance
				First Work	Second Work	Other Working						
Acadia	16,872	3,200	-	16,872	11,271	4,979	3,228	16,872	-	100.0	66.8	100.0
Shenandoah	14,270	3,080	14,270	14,270	5,012	4,323	-	13,821	100.0	100.0	35.1	96.9
Blue Ridge Parkway	13,890	5,773	13,890	13,890	2,087	119	-	11,606	100.0	100.0	15.0	83.6
Great Smoky	110,904	67,905	110,904	110,904	413	360	-	104,855	100.0	100.0	.4	94.5
Region	155,936	79,958	139,064	155,936	18,783	9,781	3,228	147,154	89.2	100.0	12.0	94.4

Table 18 - Control Work Needed on National Parks
(As of September 30, 1952)

National Park	Total Acreage of Net Control Area	Acreage in Net Control Area in Need of			Percentage of Net Control Area in Need of		
		Detail Mapping or Survey	Pre-Maintenance Work		Detail Mapping or Survey	Pre-Maintenance	
			First Work	Rework		First Work	Rework
Acadia	16,872	16,872	-	-	100.0	-	-
Shenandoah	14,270	-	-	449	-	-	3.1
Blue Ridge Parkway	13,890	-	-	2,284	-	-	16.4
Great Smoky	110,904	-	-	6,049	-	-	5.5
Region	155,936	16,872	-	8,782	89.2	-	5.6

MISCELLANEOUS ITEMS

Wage Rates

Wage rates for federal workers during the 1952 field season were promulgated by the Regional Wage Board effective on April 14 as follows:

State	Class	Rate per Hour
Maine)	(Foreman-Scout (x-5)	$1.30
Vermont)	(Crew Leader (x-4)	1.17
Connecticut)	(Laborer I (x-2)	1.04
New York)		
New Jersey)		
Pennsylvania)		
	(Foreman-Scout (x-5)	1.41
New Hampshire	(Crew Leader (x-4)	1.22
	(Laborer (x-2)	1.04
	(Foreman-Scout (x-5)	1.41
Massachusetts	(Crew Leader (x-4)	1.25
	(Laborer I (x-2)	1.09
Maryland)		
North Carolina)	(Foreman-Scout (x-5	1.20
Tennessee)	(Crew Leader (x-4)	1.05
Virginia)	(Laborer (x-2)	.89
West Virginia)		

In line with the general trend in wages in industry, state rates for labor were materially increased in 1952.

Temporary Personnel Employed on Control Work

The maximum number of workers employed by all agencies during the 1952 field season was 698.

Injuries to Temporary Federal L/A Employees

The excellent safety record maintained on the project was demonstrated again by the fact that only four men sustained injuries during the year and none was of a serious nature. There were two instances of ivy poisoning, one case of a foreign body in the eye and one injury involving a lacerated arm.

Automotive Equipment

Considerable improvement in project automotive equipment occurred during 1952. Twelve old trucks (10 of them 1935-1936 models) were sold and 2 other old trucks and a passenger car were declared surplus. In addition a 1939 (1½-ton) truck was transferred to Japanese Beetle Control and a 1950 Ford sedan to the Gulfport Office for use of the official in charge of the survey project in Region II. Five new trucks were purchased and an order placed for 2 additional

ones for delivery next spring. Seven cars were obtained by transfer as follows: three 1949 pickup trucks from the Golden Nematode Project, one 1949 truck from Gypsy Moth Control, one 1948 truck from Barberry Eradication, one 1946 sedan from the Forest Service, and one 1949 jeep from the Gulfport Regional Office. Three 1947 trucks were also transferred from our project in the Southern Appalachian Area for use in the Northeastern States.

At the end of 1952, federally-owned automotive equipment in this region included 80 trucks and 37 passenger-carrying vehicles. Two of these trucks and one passenger car have been declared surplus.

	Trucks					Passenger Cars	
Year of Manufacture	½ Ton Pick-Ups	Sedan Deliveries	Suburban Carry-All	Panels	1½ Ton	Coaches	Sedans
1935.....	1**	-	-	-	-	-	-
1936.....	1	-	-	-	-	-	1**
1939.....	2	2	-	-	-	-	-
1940.....	-	-	-	-	-	1	-
1941.....	-	-	-	-	-	1	1
1942.....	-	-	-	1	4*	4	-
1946.....	-	-	-	-	-	-	1
1947.....	32	5	-	13	-	-	5
1948.....	1	-	-	-	-	4	1
1949.....	6	-	-	-	-	-	14
1950.....	-	3	2	-	-	-	4
1951.....	2	-	-	-	-	-	-
1952.....	3	2	-	-	-	-	-
Total.....	48	12	2	14	4	10	27

** Declared surplus. 1* of these declared surplus. (The jeep not delivered until Jan. 1953)

State Compensation for Cultivated Ribes During 1952

No compensation was paid by the states to reimburse any of the owners of the cultivated ribes destroyed in connection with 1952 control activities. A record of compensation paid by the states from 1918 to 1952 will be found in Table 39 of the 1951 annual report.

APPENDIX

Table 19- Ribes Eradication Work by States and Ownerships During 1952 - Northeastern Region

Agency	First Working			Second Working			Other Working			All Workings			Per Acre Values (3)		
	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Acres	Ribes	Man Days	Ribes	Man Days	Acres Per Man Day
						State and Private									
Maine	9,029	95,749	453	66,443	209,183	1,866	82,433	167,867	2,073	157,905	472,799	4,392	3.0	.028	36.0
N. H.	17,376	161,922	669	191,390	505,046	3,481	64,698	136,589	1,084	273,464	803,557	5,234	2.9	.019	52.2
Vt.	23,870	102,688	890	11,930	25,865	332	5,968	19,795	194	41,768	148,348	1,416	3.6	.034	29.5
Mass.	17,064	24,969	246	43,175	73,124	656	20,988	26,979	243	81,227	125,072	1,145	1.5	.014	70.9
Conn.	-	-	-	-	-	-	7,335	20,368	107	7,335	20,368	107	2.8	.015	68.6
N. Y.	37,286	328,389	1,773	98,871	494,309	3,873	214,629	460,105	4,766	350,786	1,282,803	10,412	3.7	.030	33.7
Penna.	10,436	47,793	841	9,994	52,062	598	6,931	13,042	353	27,361	112,897	1,792	4.1	.065	15.3
Md.	-	-	-	553	13,697	96	-	-	-	553	13,697	96	24.8	.174	5.8
Tenn.	-	-	-	368	6,860	60	516	4,611	35	884	11,471	95	13.0	.107	9.3
Va.	(1) 10,446	37,067	826	817	3,351	138	1,393	23,010	332	(1) 12,656	63,428	1,296	8.9	.183	5.5
W. Va.	215	3,385	36	3,630	38,126	599	2,272	7,489	311	6,117	49,000	946	8.0	.155	6.5
Tot.-State & Priv.	(1) 125,722	801,962	5,734	427,171	1,421,623	11,699	407,163	879,855	9,498	(1) 960,056	3,103,440	26,931	3.2	.028	35.4
						National Forests									
White Mt.-Me.	-	-	-	1,385	7,084	76	161	384	10	1,546	7,468	86	4.8	.056	18.0
White Mt.-N.H.	40	1,605	4	-	-	-	1,025	3,601	20	1,065	5,206	24	4.9	.023	44.4
Green Mt.-Vt.	1,713	1,596	42	-	-	-	-	-	-	1,713	1,596	42	.9	.025	40.8
Allegheny-Pa.	-	-	-	320	360	17	590	1,605	55	910	1,965	72	2.2	.079	12.6
Geo.Wash.-Va.	(2) 7,497	32,104	847	14,853	97,529	3,143	12,362	31,970	2,295	(2) 34,712	161,603	6,285	5.2	.201	5.0
Geo.Wash.-W.Va.	-	-	-	270	1,371	39	2,757	11,878	440	3,027	13,249	479	4.4	.158	6.3
Jefferson-Va.	-	-	-	225	27,080	69	245	4,172	76	470	31,252	145	66.5	.309	3.2
Monongahela-W. Va.	-	-	-	-	-	-	3,575	20,643	466	3,575	20,643	466	5.8	.130	7.7
Tot.-Nat.Forest	(2) 9,250	35,305	893	17,053	133,424	3,344	20,715	74,253	3,362	(2) 47,018	242,982	7,599	5.6	.175	6.2
						National Parks									
Shenandoah	-	-	-	-	-	-	212	1,763	93	212	1,763	93	8.3	.439	2.3
Grand Tot.-Region	(1)(2) 134,972	837,267	6,627	444,224	1,555,047	15,043	427,090	955,871	12,953	(1)(2) 1,007,286	3,348,185	34,623	3.4	.035	23.8

(1) Includes 5,569 acres without ribes. (2) Includes 3,491 acres without ribes. (3) Based on ribes bearing acres only.

Table 20 - Maintenance Work During 1952 - Northeastern Region

(Data included in Table 2 in Other Workings)

State	Ownership	Acreage Worked	No. Ribes Destroyed	Total Man Days	Per Acre		Acres Worked per Man Day
					Ribes	Man Days	
Maine	State & Private	14,271	27,183	364	1.9	.026	39.2
	State & Private	12,091	24,225	305	2.0	.025	39.6
N. H.	Forest Service	770	1,063	14	1.4	.018	55.0
Vt.	State & Private	3,817	15,773	118	4.1	.031	32.3
Mass.	" " "	120	338	5	2.8	.042	24.0
Conn.	" " "	7,335	20,368	107	2.8	.015	68.6
N. Y.	" " "	35,713	77,854	995	2.2	.028	35.9
	" " "	2,249	7,569	166	3.4	.074	13.5
Penna.	Forest Service	170	115	12	0.7	.071	14.2
Va.	State & Private	685	14,998	177	21.9	.258	3.9
	" " "	383	204	25	0.5	.065	15.3
W. Va.	Forest Service	450	277	52	0.6	.116	8.7
All	State & Private	76,664	188,512	2,262	2.5	.030	33.9
States	Forest Service	1,390	1,455	78	1.0	.056	17.8
	Total	78,054	189,967	2,340	2.4	.030	33.4

Table 21 - Ribes Eradication Work on Maintenance Areas, 1946-1952, Inclusive

(No separate record kept of such work prior to 1946)

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	State & Private	33,213	48,073	278	704	1.4	.015	47.2
	National Park	8,829	1,162	-	247	.1	.028	35.7
	Total	42,042	49,235	278	951	1.2	.023	44.2
N. H.	State & Private	38,117	74,096	246	805	1.9	.021	47.4
	Forest Service	1,070	1,063	-	18	.9	.017	59.4
	Total	39,187	75,159	246	823	1.9	.021	47.6
Vt.	State & Private	7,045	25,230	-	224	3.6	.032	31.5
Mass.	" " "	1,861	4,075	-	65	2.2	.035	28.6
R. I.	" " "	87,035	13,653	166	1,500	.2	.017	58.0
Conn.	" " "	332,550	412,043	-	5,383	1.2	.016	61.8
N. Y.	" " "	329,304	514,080	282	9,296	1.6	.028	35.4
Penna.	State & Private	57,586	55,056	126	1,441	1.0	.025	40.0
	Forest Service	170	115	-	12	.7	.071	14.2
	Total	57,756	55,171	126	1,453	1.0	.025	39.7
Va.	State & Private	685	14,998	-	177	21.9	.258	3.9
W. Va.	State & Private	383	204	-	25	0.5	.065	15.3
	Forest Service	450	277	-	52	0.6	.116	8.7
	Total	833	481	-	77	0.6	.092	10.8
All States	State & Private	887,779	1,161,508	1,098	19,620	1.3	.022	45.2
	National Forest	1,690	1,455	-	82	.9	.049	20.6
	National Park	8,829	1,162	-	247	.1	.028	35.7
	Total	898,298	1,164,125	1,098	19,949	1.3	.022	45.0

Table 22 - Total Bureau, Forest Service, Park Service, State and Local Expenditures for all Blister Rust Activities in Northeastern Region During Calendar Year 1952

State	Federal					States and Local Cooperators						Grand Total
	Bureau of E. & P. Q.			Forest Service	Park Service	States		Individuals	Towns	Counties	Total	
	WA-14	WE-14	Total			Direct Aid	Indirect Aid					
Maine	$21,011	$14,605	$35,616	$ 794	-	$14,618	$ 420	-	$18,831	-	$33,869	$70,279
N. H.	31,117	19,487	50,604	267	-	10,736	295	1,042	42,118	-	54,191	105,062
Vt.	19,260	5,355	24,615	423	-	4,843	530	225	6,207	-	11,805	36,843
Mass.	14,028	5,837	19,865	-	-	10,405	-	1,482	128	-	12,015	31,880
R. I.	200	-	200	-	-	1,563	210	-	-	-	1,773	1,973
Conn.	3,704	3,365	7,069	-	-	9,942	620	586	1,386	-	12,534	19,603
N. Y.	42,485	36,813	79,298	-	-	130,549	2,350	35	-	22,505	155,439	234,737
Penna.	18,670	4,479	23,149	711	-	21,437	775	-	-	-	22,212	46,072
Md.	409	294	703	-	-	339	-	-	-	-	339	1,042
N. C.	1,612	150	1,762	-	6,479	-	450	-	-	-	450	8,691
Tenn.	5,664	1,158	6,822	724	-	582	275	-	-	-	857	8,403
Va.	14,854	7,327	22,181	64,584	3,975	5,957	350	-	-	-	6,307	97,047
W. Va.	13,518	4,320	17,838	9,149	-	5,790	400	-	-	-	6,190	33,177
Sub-Totals F.Y.1952	94,051	60,891	154,942	47,477	5,226	123,926	3,400	1,633	23,444	7,148	159,551	367,196
F.Y.1953	92,481	42,299	134,780	29,175	5,228	92,835	3,275	1,737	45,226	15,357	158,430	327,613
Grand Total	$186,532	$103,190	$289,722	$76,652	$10,454	$216,761	$6,675	$3,370	$68,670	$22,505	$317,981	$694,809

The project office costs at Greenfield are included in the above federal figures and prorated by states.

(Sept[illegible]r 30, 1952)

State	District	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked: Pre-Maintenance Work: First	Net Acreage Worked: Pre-Maintenance Work: Second	Net Acreage Worked: Pre-Maintenance Work: Other	Net Acreage Worked: Maintenance Work	Acreage in Control Area: Now on Maintenance Basis	Acreage in Control Area: In Need of Pre-Maintenance Work: First Work	Acreage in Control Area: In Need of Pre-Maintenance Work: Rework	Percentage of Control Area: Detail Mapped	Percentage: Worked: Pre-Maintenance: First	Percentage: Worked: Pre-Maintenance: Second	Percentage: Worked: Pre-Maintenance: Other	Percentage: Worked: Maintenance	Percentage: On Maintenance	Percentage: In Need of Pre-Maintenance Work: First Work	Percentage: In Need of Pre-Maintenance Work: Rework
Maine	Bradbury	751,672	225,045	715,657	652,235	335,070	70,761	34,131	376,860	99,437	275,375	95.2	86.8	44.6	9.4	4.5	50.2	13.2	36.6
	Calderara	781,653	305,897	733,585	746,192	496,336	117,249	2,284	338,218	35,461	407,974	89.9	95.5	63.5	15.0	.3	43.3	4.5	52.2
	Pike	794,922	374,182	702,329	794,922	605,948	161,299	15,218	537,481	-	257,441	88.4	100.0	76.2	20.3	1.9	67.6	-	32.4
	Totals for State	2,328,247	905,124	2,151,571	2,193,349	1,437,354	349,309	51,633	1,252,559	134,898	940,790	92.4	94.2	61.7	15.0	2.2	53.8	5.8	40.4
N. H.	Boomer	401,781	166,283	396,465	395,459	220,449	14,191	3,851	163,528	6,322	231,931	98.7	98.4	54.9	3.5	1.0	40.7	1.6	57.7
	Codman	277,118	135,802	231,767	277,118	204,376	57,623	16,693	185,924	-	91,194	83.6	100.0	73.8	20.8	6.0	67.1	-	32.9
	Conner	718,480	347,276	357,880	710,681	520,754	83,857	17,083	425,316	7,799	285,365	49.8	98.9	72.5	11.7	2.4	59.2	1.1	39.7
	Curtis	014,918	289,590	271,483	611,318	264,754	16,365	6,052	238,478	3,600	372,840	44.1	99.4	43.1	2.7	1.0	38.8	.6	60.6
	Newman	204,111	107,920	132,214	204,111	132,735	38,556	102	82,449	-	121,662	64.8	100.0	65.0	18.9	.1	40.4	-	59.6
	Richardson	467,206	184,383	368,953	443,872	226,380	12,344	4,125	166,411	23,334	277,461	79.0	95.0	48.5	2.6	.9	35.6	5.0	59.4
	Totals for State	2,683,614	1,231,254	1,758,762	2,642,559	1,569,448	222,936	47,906	1,262,106	41,055	1,380,453	65.5	98.5	58.5	8.3	1.8	47.0	1.5	51.5
Vt.	Mulholland	224,210	46,307	224,150	159,118	51,767	8,594	-	59,269	65,092	99,849	99.9	71.0	23.1	3.8	-	26.5	29.0	44.5
	Palmer	184,666	45,899	183,986	156,962	49,783	5,261	6,996	129,301	27,704	27,661	99.6	85.0	27.0	2.8	3.8	70.0	15.0	15.0
	Rose	324,527	79,599	317,839	304,553	121,374	27,737	3,200	266,457	19,974	38,096	97.9	93.8	37.4	8.5	1.0	82.1	6.2	11.7
	Totals for State	733,403	171,805	725,975	620,633	222,924	41,592	10,196	455,027	112,770	165,606	99.0	84.6	30.4	5.7	1.4	62.0	15.4	22.6
Mass.	Brockway	520,789	242,586	519,123	504,144	366,671	25,409	6,361	390,266	16,645	113,878	99.7	96.8	70.4	4.8	1.2	74.9	3.2	21.9
	Doore	371,019	115,390	299,474	370,873	314,059	106,931	1,470	263,766	146	107,107	80.7	99.9	84.6	28.8	.4	71.1	.1	28.8
	Eastern Mass.	600,095	222,322	261,443	598,912	463,933	22,192	-	590,228	1,183	8,684	43.6	99.8	77.3	3.7	-	98.4	.2	1.4
	Totals for State	1,491,903	580,298	1,080,040	1,473,929	1,144,663	154,532	7,831	1,244,260	17,974	229,669	72.4	98.8	76.7	10.4	.5	83.4	1.2	15.4
R. I.	Schreier	145,483	62,563	131,535	145,483	139,095	34,068	85,580	145,483	-	-	90.4	100.0	95.6	23.4	58.8	100.0	-	-
Conn.	Miller	272,056	44,806	272,056	272,056	156,305	56,832	203,215	272,056	-	-	100.0	100.0	57.5	15.3	74.7	100.0	-	-
	Sohreier	194,837	48,786	194,837	194,837	149,933	72,811	149,624	194,837	-	-	100.0	100.0	77.0	37.4	76.8	100.0	-	-
	Totals for State	466,893	93,592	466,893	466,893	306,238	129,643	352,839	466,893	-	-	100.0	100.0	65.6	27.8	75.6	100.0	-	-
N. Y.	Barber	479,004	131,435	472,429	448,242	372,233	228,792	96,782	257,059	30,762	191,183	98.6	93.6	77.7	47.8	20.2	53.7	6.4	39.9
	Charlton	185,925	50,254	185,925	185,760	156,280	80,985	14,430	147,195	165	38,565	100.0	99.9	84.1	43.6	7.8	79.2	.1	20.7
	Harpp	629,612	294,105	611,336	629,295	591,359	407,200	259,262	487,234	317	142,061	97.1	99.9	93.9	64.7	41.2	77.4	.1	22.5
	Hick	218,053	45,860	217,018	213,263	156,760	63,827	22,262	125,611	4,790	87,652	99.5	97.8	71.9	29.3	10.2	57.6	2.2	40.2
	Holcomb	232,785	72,337	207,790	228,515	184,945	118,405	23,195	132,625	4,270	95,890	89.3	98.2	79.4	50.9	10.0	57.0	1.8	41.2
	Sievers	268,798	65,222	246,163	268,673	161,350	20,809	5,210	190,848	125	77,825	91.6	99.9	60.0	7.7	1.9	71.0	.1	28.9
	Woolschlager	239,420	74,551	182,134	233,185	153,512	54,650	3,360	117,109	6,235	116,076	76.1	97.4	64.1	22.8	1.4	48.9	2.6	48.5
	Western N. Y.	152,077	26,713	14,075	142,220	67,498	4,310	11,512	67,282	9,857	74,938	9.3	93.5	44.4	2.8	7.6	44.2	6.5	49.3
	Totals for State	2,405,674	760,477	2,136,870	2,349,153	1,843,937	978,978	436,013	1,524,963	56,521	824,190	88.8	97.7	76.6	40.7	18.1	63.4	2.3	34.3
N. J.	Totals for State	16,742	3,771	-	16,742	1,417	-	-	16,742	-	-	-	100.0	8.5	-	-	100.0	-	-
Penna.	DeBerti	169,905	31,746	168,100	169,210	92,738	13,965	6,430	145,812	695	23,398	98.9	99.6	54.6	8.2	3.8	85.8	.4	13.8
	Fatzinger	138,360	38,195	137,190	136,794	110,376	37,013	13,112	111,253	1,566	25,541	99.2	98.9	79.8	26.8	9.5	80.4	1.1	18.5
	Lilley	188,661	37,754	188,661	187,529	115,911	19,920	33,981	156,247	1,132	31,282	100.0	99.4	61.4	10.6	18.0	82.8	.6	16.6
	Totals for State	496,926	107,695	493,951	493,533	319,025	70,898	53,523	413,312	3,393	80,221	99.4	99.3	64.2	14.3	10.8	83.2	.7	16.1
Sub-Total	N. E. States	10,768,885	3,916,579	8,945,597	10,402,274	6,984,101	1,981,956	1,045,521	6,781,345	366,611	3,620,929	83.1	96.6	64.9	18.4	9.7	63.0	3.4	33.6
Del.	George	6,186	242	6,186	6,186	-	-	-	6,186	-	-	100.0	100.0	-	-	-	100.0	-	-
Md.	George	163,590	70,550	163,590	163,590	16,986	27,378	-	152,227	-	11,363	100.0	100.0	10.4	16.7	-	93.1	-	6.9
Georgia	Stegall	674,355	544,478	674,355	674,355	1,008	538	-	674,015	-	340	100.0	100.0	.1	.1	-	99.9	-	.1
N. Car.	Stegall	1,625,154	733,725	1,625,154	1,625,154	11,225	4,754	-	1,611,973	-	13,181	100.0	100.0	6.9	2.9	-	99.2	-	.8
S. Car.	Stegall	130,870	64,192	130,870	130,870	29,635	-	-	130,870	-	-	100.0	100.0	22.6	-	-	100.0	-	-
Tenn.	Stegall	1,636,344	767,742	1,636,344	1,636,344	15,299	5,276	-	1,615,196	-	21,148	100.0	100.0	.9	.3	-	98.7	-	1.3
Ky.	Keaton	146,314	48,179	146,314	146,314	65	65	-	146,314	-	-	100.0	100.0	.1	.1	-	100.0	-	-
W. Va.	Keaton	823,392	339,193	823,392	822,817	136,252	33,656	833	650,544	575	172,273	100.0	99.9	16.5	4.1	.1	79.0	.1	20.9
Va.	Cramer	2,020,756	773,510	2020,756	1,995,504	120,129	60,007	685	1,880,398	25,252	115,106	100.0	98.8	5.9	3.0	.1	93.1	1.2	5.7
Sub-Total	So. Appalachian	7,226,961	3,341,811	7,226,961	7,201,134	330,599	131,674	1,518	6,867,723	25,827	333,411	100.0	99.6	4.6	1.8	.1	95.0	.1	4.6
GRAND TOTAL	N. E. REGION	17,995,846	7,258,390	16,172,558	17,603,408	7,314,700	2,113,630	1,047,039	13,649,068	392,438	3,954,340	89.9	97.8	40.6	11.7	5.8	75.8	2.2	22.0

Table 24 - STATUS OF BLISTER RUST CONTROL, BY STATES AND LAND OWNERSHIP CLASSES, IN THE NET CONTROL AREA OF THE NORTHEASTERN REGION - SEPTEMBER 30, 1952

State	Land Ownership	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked: Pre-Maintenance Work: First	Net Acreage Worked: Pre-Maintenance Work: Second	Net Acreage Worked: Pre-Maintenance Work: Other	Net Acreage Worked: Maintenance Work	Acreage in Control Area: Now on Maintenance	Acreage in Control Area: In Need of Pre-Maintenance Work: First Work	Acreage in Control Area: In Need of Pre-Maintenance Work: Rework	Percentage of Control Area: Detail Mapped	Percentage: Worked: Pre-Maintenance: First	Percentage: Worked: Pre-Maintenance: Second	Percentage: Worked: Pre-Maintenance: Other	Percentage: Worked: Maintenance	Percentage: On Maintenance	Percentage: In Need of Pre-Maintenance Work: First Work	Percentage: In Need of Pre-Maintenance Work: Rework
							State and Private												
Maine	State and Private	2,309,070	900,924	2,149,266	2,174,172	1,423,931	344,134	48,405	1,233,884	134,898	940,288	93.1	94.2	61.7	14.9	2.1	53.4	5.8	40.8
N. H.	"	2,680,540	1,230,254	1,755,688	2,639,485	1,566,464	220,298	46,836	1,259,112	41,055	1,380,373	65.5	98.5	58.4	8.2	1.7	47.0	1.5	51.5
Vt.	"	731,117	171,264	723,749	618,347	222,809	41,592	10,196	454,120	112,770	164,227	99.0	84.6	30.5	5.7	1.4	62.1	15.4	22.5
Mass.	"	1,491,903	580,298	1,080,040	1,473,929	1,144,663	154,532	7,831	1,244,260	17,974	229,669	72.4	98.8	76.7	10.4	.5	83.4	1.2	15.4
R. I.	"	145,483	62,563	131,535	145,483	139,095	34,068	85,580	145,483	-	-	90.4	100.0	95.6	23.4	58.8	100.0	-	-
Conn.	"	466,893	93,592	466,893	466,893	306,238	129,643	352,839	466,893	-	-	100.0	100.0	65.6	27.8	75.6	100.0	-	-
N. Y.	"	2,405,674	760,477	2,136,870	2,349,153	1,843,937	978,978	436,013	1,524,963	56,521	824,190	88.8	97.7	76.6	40.7	18.1	63.4	2.3	34.3
N. J.	"	16,742	3,771	-	16,742	1,417	-	-	16,742	-	-	-	100.0	8.5	-	-	100.0	-	-
Penna.	"	492,841	106,738	489,866	489,448	315,890	69,657	53,353	410,652	3,393	78,796	99.4	99.3	64.1	14.1	10.8	83.3	.7	16.0
Del.	"	6,186	242	6,186	6,186	-	-	-	6,186	-	-	100.0	100.0	-	-	-	100.0	-	-
Ga.	"	324,452	248,576	324,452	324,452	678	441	-	324,302	-	150	100.0	100.0	.2	.1	-	99.9	-	.1
Ky.	"	114,312	31,199	114,312	114,312	-	-	-	114,312	-	-	100.0	100.0	-	-	-	100.0	-	-
Md.	"	163,590	70,550	163,590	163,590	16,986	27,378	-	152,227	-	11,363	100.0	100.0	10.4	16.7	-	93.1	-	6.9
N. Car.	"	1,361,532	581,619	1,361,532	1,361,532	6,631	2,495	-	1,358,872	-	2,660	100.0	100.0	.5	.2	-	99.8	-	.2
S. Car.	"	77,008	45,398	77,008	77,008	25,935	-	-	77,008	-	-	100.0	100.0	33.7	-	-	100.0	-	-
Tenn.	"	1,068,275	461,565	1,068,275	1,068,275	13,196	5,235	-	1,050,433	-	17,842	100.0	100.0	1.2	.5	-	98.3	-	1.7
Va.	"	1,527,243	554,228	1,527,243	1,502,430	35,969	10,425	685	1,443,632	24,813	58,798	100.0	98.4	2.4	.7	.1	94.5	1.6	3.9
W. Va.	"	681,090	261,560	681,090	680,515	114,813	19,087	153	518,101	575	162,414	100.0	99.9	16.9	2.8	.1	76.1	.1	23.8
Sub-Total	State and Private	16,063,951	6,164,818	14,257,595	15,671,952	7,178,652	2,037,963	1,041,891	11,801,182	391,999	3,870,770	88.8	97.6	44.7	12.7	6.5	73.5	2.4	24.1
							National Forests												
Me. & N.H.	White Mountain	5,379	2,000	5,379	5,379	5,136	2,834	1,070	4,797	-	582	100.0	100.0	95.5	52.7	19.9	89.2	-	10.8
Vt.	Green Mountain	2,286	541	2,226	2,286	115	-	-	907	-	1,379	100.0	100.0	5.0	-	-	39.7	-	60.3
Penna.	Allegheny	4,085	957	4,085	4,085	3,135	1,241	170	2,660	-	1,425	100.0	100.0	76.7	30.4	4.2	65.1	-	34.9
Ga.	Chattahoochee	349,903	295,902	349,903	349,903	330	97	-	349,713	-	190	100.0	100.0	.1	.1	-	99.9	-	.1
Ky.	Cumberland	32,002	16,980	32,002	32,002	65	65	-	32,002	-	-	100.0	100.0	.1	.1	-	100.0	-	-
N. Car.	Nantahala	62,709	42,138	62,709	62,709	7	-	-	62,702	-	7	100.0	100.0	.1	-	-	100.0	-	-
N. Car.	Pisgah	161,752	92,697	161,752	161,752	2,943	1,780	-	158,535	-	3,217	100.0	100.0	1.8	1.1	-	98.0	-	2.0
S. Car.	Sumter	53,862	18,794	53,862	53,862	3,700	-	-	53,862	-	-	100.0	100.0	6.9	-	-	100.0	-	-
Tenn.	Cherokee	484,572	250,378	484,572	484,572	2,103	41	-	481,266	-	3,306	100.0	100.0	.4	.1	-	99.3	-	.7
Va.	Jefferson	107,474	55,084	107,474	107,474	3,962	1,101	-	102,889	-	4,585	100.0	100.0	3.7	1.0	-	95.7	-	4.3
Va.& W.Va.	Geo. Washington	421,931	191,267	421,931	421,492	84,163	51,542	-	366,778	439	54,714	100.0	99.9	19.9	12.2	-	86.9	.1	13.0
W. Va.	Monongahela	89,559	46,854	89,559	89,559	11,606	7,185	680	84,176	-	5,383	100.0	100.0	13.0	8.0	.8	94.0	-	6.0
Sub-Total	National Forests	1,775,514	1,013,592	1,775,454	1,775,075	117,265	65,886	1,920	1,700,287	439	74,788	100.0	99.9	6.6	3.7	.1	95.8	.1	4.1
							National Parks												
Maine	Acadia	16,872	3,200	-	16,872	11,271	4,979	3,228	16,872	-	-	-	100.0	66.8	29.5	19.1	100.0	-	-
N.C. & Va.	Blue Ridge	13,890	5,773	13,890	13,890	2,087	119	-	11,606	-	2,284	100.0	100.0	15.0	.9	-	83.6	-	16.4
N.C.& Tenn.	Great Smoky	110,904	67,905	110,904	110,904	413	360	-	104,855	-	6,049	100.0	100.0	.4	.3	-	94.5	-	5.5
Va.	Shenandoah	14,270	3,080	14,270	14,270	5,012	4,323	-	13,821	-	449	100.0	100.0	35.1	30.3	-	96.9	-	3.1
Sub-Total	National Parks	155,936	79,958	139,064	155,936	18,783	9,781	3,228	147,154	-	8,782	89.2	100.0	12.0	6.3	2.1	94.4	-	5.6
							Indian Service												
N. Car.	Cherokee Ind. Res.	445	22	445	445	-	-	-	445	-	-	100.0	100.0	-	-	-	100.0	-	-
GRAND TOTAL	All Ownerships	17,995,846	7,258,390	16,172,558	17,603,408	7,314,700	2,113,630	1,047,039	13,649,068	392,438	3,954,340	89.9	97.8	40.6	11.7	5.8	75.8	2.2	22.0

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WHITE PINE BLISTER RUST CONTROL ACTIVITIES

SOUTHERN APPALACHIAN AREA

SUMMARY FOR 1952

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

Room 208, Federal Building
Harrisonburg, Virginia

STATE AND PRIVATE LANDS

Maryland
North Carolina
Tennessee
Virginia
West Virginia

MARYLAND

The Maryland survey records indicate that there is about 70,000 acres of white pine in the State. Over 30,000 acres of the control area supports wild ribes. Over 4 million bushes have been pulled in the State. The largest acreages of white pine occur in the western portion of the State in Allegany and Washington Counties. The pine is usually found in mixture with hardwoods or Virginia Pine. Smaller scattered areas of white pine are found in Garrett, Frederick, Carroll and Baltimore Counties. There are also some plantations in the State that have been set out in connection with watershed management. In most instances these plantations are growing very well.

As indicated in the 1951 annual report, the control of blister rust in the pine areas still under protection, should not represent a major problem. Many areas in the western part of the State, where plantations were originally set out without regard to ribes populations, have been ruined by blister rust. For those areas remaining under protection control should be maintained with a small annual expenditure.

The State Department of Forests and Parks handle the States portion of the control program in Maryland. Their field employees are well acquainted with the blister rust problem and take an active interest in the activities each year. Much of the work done in recent years has been in connection with protection of pine on State owned lands. The State employees have been on the lookout for ribes in connection with their normal duties on areas where it is planned to plant white pine. They recommend eradication on such sites prior to planting if this eradication can be performed at a justifiable cost. The quarantines for Maryland are under the supervision of the State Plant Pathologist at University of Maryland at College Park.

Work performed in Maryland during 1952 was confined to the Savage River State Forest in Garrett County and consisted of eradication only. The crews removed 13,697 ribes from 553 acres in 97 man-days. This was an average coverage of 5.75 acres per man-day and 24.8 ribes were removed per acre.

As mentioned previously, very little work is considered necessary in Maryland in the next few years. Some eradication, similar to that done during the current year, will be performed from year to year. Even though very little ribes eradication work is planned it will be necessary for those interested in the program to watch the areas under protection quite closely and arrange for removal of the bushes that appear. Conditions are very good for spread of rust, particularly in Allegany and Garrett Counties. The recurrance of bushes in protected zones could cause heavy damage in a short time.

NORTH CAROLINA

White pine is found in commercial quantities in 25 western North Carolina counties on 733,000 acres of forest land. Of this acreage, 581,000 acres is on State and private lands and 135,000 is on National Forest lands. The balance is on lands under the jurisdiction of the National Park Service. Although there are large acreages of white pine in this State, ribes grow in association with the pine only in scattered locations. Infection is now well distributed over the State, thus many acres of very valuable white pine are open to damage from a relatively small acreage of ribes.

The purpose of the North Carolina control program is to prevent commercial blister rust damage. The immediate objective of the work is to bring the entire control area under maintenance. Examinations on a definite schedule along with the small amount of eradication found necessary should provide adequate control.

Up until the present time economic damage to the commercial stands of white pine in the State has not occurred. Local build-ups of rust have been found in various locations. Rust found in a commercial nursery during the past year has resulted in some loss to the nursery owner. Among the local build-ups of rust which have been under observation is that on the Ashe County plot where blister rust has been killing the older trees and the seedlings are becoming infected shortly after they appear. At Montezuma in Avery County, of 1,076 white pines examined on a .4 acre plot 14.8% were infected by blister rust and 1.3% had been killed. The initial infection on this plot occurred about 1946 which indicated that blister rust infection can develop quite rapidly once it comes into an area. In this State, as well as other locations in the Southern Appalachians, observations indicate that heavy infection can be spread by relatively few ribes bushes. At the higher elevations where conditions are ideal for the spread of rust, damage is severe. Experimental plantations of P. monticola on Mt. Mitchell are being wiped out completely. Throughout the years these plantations have been decimated due to inability to survive at this location because of climate and disease. In 1952 all trees remaining on the area are so heavily infected with blister rust, both branch and stem cankers, that it is doubtful any will survive for more than five years.

Blister rust control work in North Carolina is carried on cooperatively with the North Carolina Department of Agriculture. The State Entomologist, Mr. C. H. Brannon is responsible for the State's portion of the program. Other cooperators include the State Forestry Department and the Extension Service. Representatives of these groups, along with those from TVA, SCS and various companies have been very helpful in the field. They have done much to develop interest in the program in connection with their field contacts and have attempted to bring blister rust to the attention of all participating in the extensive white pine planting programs.

In North Carolina 99.8% of the control area on State and private lands is on maintenance. According to the present schedule the remaining control acreage should be on maintenance within the next five to ten years. The objective of the plan for the next ten years, is maintenance of ribes populations at a level which would not permit commercial damage in white pine stands. Vigilance must be maintained on the spread of the rust in areas where it has not been observed up to this time. The continuing inspection of all areas in the State by trained individuals with authority to take immediate action to eliminate any ribes which may be a threat will be necessary. Damage has not occurred because control work was done initially prior to entrance of infection. Because of this, the public is not aware of the havoc that results when ribes are permitted to grow in association with white pine.

During 1952 no ribes eradication work was performed in North Carolina. Control area examination in Buncombe, Mitchell, Avery, Ashe, Madison and Yancey Counties was performed on 1,975 acres to determine the status of control, re-evaluate white pine conditions and scout for disease. No mapping was done during the year. The chief change in operations that has occurred is the general elimination of formal checking. In place of this, trained personnel examine areas where ribes are most liable to occur and determine the need for work. In this State the new TVA Topographic maps are sufficiently detailed and accurate so that they can be used to excellent advantage in locating ribes areas. By the use of these maps much costly survey has been eliminated.

The majority of the activities in connection with the informational program in North Carolina were carried on in the early part of 1952. District Leader Stegall participated in a radio program with District Forester Fred Whitfield of the North Carolina Extension Service. The blister rust portion of the program was of the question and answer type. Slides dealing with blister rust were used by the Extension Service in meetings for Farm Bureau members and Veteran Trainees in western North Carolina. They were also used during the County Agent

training programs. Blister rust control was included on the three Forestry Field Day programs held in Henderson County. These programs were presented to FFA and 4-H members, veteran trainees and local farmers. "Show Me" trips were made to the Ashe County Infection Study Plot. Among those examining the blister rust damage at the plot were Pathology Professors from the North Carolina State College at Raleigh. In the fall the mechanical blister rust exhibit was used at the joint convention of the American Forestry Association and the North Carolina Forestry Association held in the Battery Park Hotel at Asheville. At the suggestion of Dr. G. H. Hepting a colored map showing white pine and blister rust infection areas in the United States was also displayed.

During 1952 the field supervisor was assigned as District Leader and his district will include Georgia, North Carolina, South Carolina and Tennessee. Mr. Walter A. Stegall, Jr., whose headquarters are in the Federal Building at Asheville, North Carolina is the District Leader responsible for blister rust operations in these states.

No special effort was made this year to locate new blister rust infection areas. The early season was extremely dry and therefore very little infection occurred on ribes. In connection with normal work and travel some new infection was found on white pine in the Pinecola-Montezuma section of Avery County. This was the only new blister rust infection reported during the year and it did occur in a general area where infection had been found previously.

It is recommended that the survey be continued in North Carolina to determine the distribution of wild ribes in areas above the level of the white pine. The large planting program that is being carried on in the State and expanded each year involves some of these areas. The information would be very valuable to those concerned with this program. It would also be advisable to extend the informational program to acquaint individuals with the disease not only in counties where blister rust is now a menace but where they are likely to be confronted with it in the future.

The North Carolina State Quarantine Regulations governing the movement of white pine from nurseries were revised January 7, 1952. This revision permits intra-state movement of 5-needle pines not visably infected with blister rust regardless of whether or not the pines were grown in a nursery protected from blister rust. The revision also deleted Cleveland County from the western counties designated as being part of the State blister rust control area.

TENNESSEE

In Tennessee blister rust surveys indicate there is 461,000 acres of white pine on State and private lands. In addition to this there is 250,000 acres in the Cherokee National Forest and nearly 56,000 acres in the Great Smoky Mountains National Park. This pine is found in eleven counties along the western boundaries of the State and ten counties in the Cumberland Mountains. The quality of most Tennessee white pine is excellent. Where it has been protected from fire and grazing, reproduction is everything that could be desired. R. rotundifolium, R. cynosbati, R. Missouriensis, R. curvatum, and R. glandulosum have been found in the State. R. glandulosum has been found in association with pine in only one county. Other spots have been observed but they are high on the moist, cool western slopes and are above the white pine. R. missouriensis has been found only in Johnson County and there its occurrence has been limited to one section. R. curvatum is found in the southern portion of the white pine area of the State. So far as their recurrance is concerned, this species has given more trouble than all the others. Wild ribes have been found in a scattered pattern on slightly more than 31,000 acres in the white pine area. The entire acreage has been worked the first time.

The purpose of the control program in Tennessee is to establish control on the small acreage that is not now on maintenance and to examine the balance of the ribes-bearing acreage at properly spaced intervals so that the ribes population does not increase to the point where commercial damage can occur.

To date commercial damage has not occurred in the white pine stands. Infection areas were found in Morgan County where no work had been performed since 1936. At that time 35,000 ribes were destroyed. It was noted in connection with each infection found in this county, the damage was very localized, being within a few hundred feet of ribes that had regenerated in small clumps on the tops of boulders. Except at these most favorable sites ribes comeback was negligable. It seems reasonable to assume had no eradication work been done that general infection would have occurred and heavy white pine loss resulted. This is the case generally in the states of the Appalachians and infections that have been observed indicate that much damage can be done from a small number of ribes.

Observations would indicate that this state, along with North Carolina and Georgia, will rank high in future white pine production. The cost of protection from white pine blister rust should be among the lowest in the country.

Control work in Tennessee has been a cooperative undertaking since the beginning of the program in 1934. The State Division of Forestry has been the cooperator responsible for the State's portion of field activities. The State Plant Pathologist in the Department of Agriculture is responsible for quarantine regulations. In the field, District Foresters, the TVA, and U. S. Forest Service rangers have been very helpful.

On State and private lands in Tennessee 98.3% of the control area is now on maintenance. Approximately half of the ribes-bearing acreage has been worked three times. The third working was performed on areas where the problem was most acute and for practical purposes control has been established. Work in the state was started prior to the time any infection occurred. Therefore, commercial damage has been prevented. Plans for the future include a reduction of the ribes population on those areas not now on maintenance so that they can be brought into the maintenance category. Periodic examinations of all ribes-bearing areas is scheduled so that eradication work can be done as needed.

The work during 1952 included control area examination of 2,885 acres in Bledsoe, Cumberland, Johnson, Morgan and Rhea Counties. These examinations were encouraging since they revealed that ribes come-back has been slight on most areas. They also reveal that the intervals between workings must not be too great, otherwise ribes have an opportunity to re-establish themselves during the interval and infection, with resulting damage, can occur.

Very little re-mapping was performed during the year. Six hundred-eighty acres in Morgan County were re-mapped to determine the present pine count on a questionable area and to adjust the control.

Eradication work was performed on State and private lands in Bledsoe, Cumberland, Johnson and Morgan Counties. The work done in Johnson County was on intermingled lands within the purchase unit of the Cherokee National Forest. Ribes were removed on a total of 884 acres. The average number found was 13 per acre. Ninety-five man-days were devoted to this work. About 1/3 of the acreage worked was being worked for the second time and the balance was 'third or other'.

Future examinations should be conducted by general reconnaissance if this is possible. Where a general reconnaissance of likely ribes sites does not give a satisfactory or complete picture of the eradication needs of the area formal post checks by strips should be made.

The project for the next year should be operated at about the same level as it has been during the past few years.

During 1952, Mr. Walter A. Stegall, Jr. was assigned as District Leader responsible for blister rust operations in Georgia, North Carolina, South Carolina and Tennessee. He formerly operated as a Field Supervisor in this same territory. His headquarters are in the Federal Building at Asheville, North Carolina.

No special effort was made during the year to locate new blister rust infection. However, in connection with normal work and travel some new infections were found in Morgan County. This has been referred to previously in this report. These Morgan County infections are the farthest west that blister rust has been observed on white pine in the Southern Appalachians. The next nearest known pine infection is about 107 miles east (in North Carolina).

No experimental work with chemicals was done during the year. A small mop-up job on a R. curvatum area in Bledsoe County, treated with 3% solution of 2,4,-D and 2,4,5-T in Kerosene during 1951, was performed to control sprouts that appeared. This would indicate that R. curvatum needs at least two applications to eradicate them. It has been found that making two applications of an herbicide of this type is far easier and is more effective than hand pulling. A plot of R. glandulosum was treated with a solution similar to that mentioned above in September 1950 and the area examined in September 1952. The treatment was 100% effective. Herbicides will be used for eradication of this species in the future in the Southern Appalachians.

It is recommended that work schedules be revised so that ribes areas are examined at least once every seven years to determine the amount of comeback. If this examination shows that the comeback has been sufficient to permit commercial damage, the schedule should be so arranged that eradication can be performed without delay. Scouting should be continued to determine the general range of ribes within the State. Planting of white pine is becoming

quite common even in areas that are considered out of its natural range. Growth on some of these areas has been excellent. The blister rust organization should be in a position to advise foresters and others concerned with planting problems regarding ribes distribution. An effort should be made to acquaint them with the damage that results if plantations are set out in association with ribes.

The Federal quarantine was revised during the year and Tennessee was among the states moved from the non-infected to the infected group. This change restricts the movement of white pine from this State to any State now in the non-infected group. Georgia, Kentucky and South Carolina were also placed in the infected group even though infection has not been observed on white pine to date in any of these three states. These states are exposed to infection from adjacent states. White pine not visably infected with blister rust can be moved between the infected states wihout restrictions.

1952 ERADICATION
ON
STATE AND PRIVATE LANDS

County	Working	Acres	Ribes	Man-Days
Bledsoe	2nd	2	817	2
Cumberland	2nd	43	58	4
Johnson	Other	340	551	10
Morgan	2nd	323	5,985	54
	Other	176	4,060	25
Total		884	11,471	95

VIRGINIA

Virginia has 773,000 acres of white pine. Some 554,000 acres of this pine is on state and private lands and the balance is on National holdings as follows: George Washington National Forest 161,000 acres, Jefferson National Forest 55,000 acres, Shenandoah National Park 3,080 acres and the Blue Ridge Parkway 630 acres. This pine is found in 33 counties extending from the eastern slopes of the Blue Ridge range to the West Virginia State line, and to the Clinch Mountains in the southwestern part of the State. With the exception of occasional woodlots and some small plantations, pine is not generally found in the valleys. Throughout the State it occurs in mixture with hardwoods and usually is dominant or co-dominant where found. Ribes occur generally throughout the white pine counties of the State. They can be found almost everywhere in the central counties but are limited to scattered locations in the southwest. They are found on slightly over 300,000 acres in association with white pine. The chief problem is on National Forest holdings since these holdings are confined to mountainous areas which are better suited to ribes than the lower elevations where most of the privately owned white pine is found. Infection is distributed throughout the State and the ribes population must be kept at a low level to keep commercial damage from creeping into the valuable white pine stands.

The purpose of the program in Virginia is to prevent commercial blister rust damage. The immediate objective insofar as State and private lands is concerned is to complete the initial work on 25,000 acres and bring all areas into a maintenance status. The ultimate plan is to get the ribes population reduced to the point where they can not cause damage. This status should be maintained by periodic inspection of the areas at definite intervals. Ribes eradication should be performed where necessary. Although much of the area is on maintenance, considerable work will be required for many years to keep regenerating ribes from spreading infection. In addition to the present white pine areas, reproduction is being observed throughout the State where protection is being provided from fire, grazing, disease and insects. This expansion, together with planned planting programs, will necessitate constant alertness to provide control.

Blister rust control was started in Virginia prior to general distribution of infection. Ribes were removed in many of the better commercial stands of white pine prior to the first infection. Therefore, commercial damage has not occurred in most of these stands. On areas where control work has not been done, blister

rust damage has been very heavy. This is particularly true at the higher elevations where conditions are ideal for spore germination. At such locations few white pine still remain. Those remaining have many cankers and they will completely disappear in the next few years. Foresters consider these few remaining trees at higher points very valuable sources of seed and are anxious to have control established at these locations so that the seedlings can survive.

During 1952 the Virginia legislature enacted a Forest Insect and Disease bill which transferred the administration of blister rust program from the State Entomologist in the Department of Agriculture and Immigration to the State Forester in the Department of Conservation and Development. Both of these agencies have been excellent cooperators since the inception of the blister rust control program. The original cooperative agreement between the Bureau and these agencies had been written in such a manner that it was not necessary to make any changes to provide for this change in the disbursement of State funds and general supervision of field work. As a result of the above legislation the State Forester established a Division of Forest Insect and Disease Investigations within his organization. This division has as its first chief, Dr. G. H. Plumb, formerly with the Connecticut Station at New Haven. The State Entomologist's office continues an active interest in the program and they are responsible for the enforcement of quarantines.

As in previous years, cooperation with the general public, land owners, civic groups, agricultural groups, federal and State agencies has been excellent. This interest probably stems from the enthusiastic acceptance that conservation programs in general are receiving in Virginia. People are becoming more and more interested in forestry and forest protection. The Virginia Forest Service, Extension Service, and Soil Conservation Service have done much to bring sound conservation practices to the attention of the people.

Progress is being made toward getting the ribes-bearing areas of the state on maintenance. At the end of the present year 94.5% of the state and private lands were in a maintenance status. However, as mentioned previously, 25,000 acres of these lands have never had any work. This work is scheduled to be completed in the next ten years in accordance with the work plan formulated in 1951. The plan was included in the 1951 annual report. About 1/4 of the ribes-bearing acreage on state and private lands has been worked twice and only 11,000 acres has been covered the third time. Most of the areas that were covered initially must be scheduled for re-work so that regenerating ribes can be removed in sufficient time to prevent infection from developing. The program has been operating at its present scale for several years and it is believed that by continuing it at the same scale commercial damage can be prevented.

In the course of regular work it may be found that some troublesome spots are developing but it now appears that the plan has enough flexibility so that they could be handled as they are found. Survey remains to be done on private holdings in Albemarle, Bedford, Greene, Floyd, Franklin, Carroll, Patrick, Henry, Page, Roanoke, Warren, Rappahannock, Montgomery and Madison Counties. From general knowledge of these counties it does not seem that much of an eradication problem will result from the survey.

During the year area examination was conducted on State and private lands in Bath, Botetourt, Grayson, Montgomery, Roanoke, Smyth and Washington Counties to determine the status of control. There were 29,905 acres examined within the control area and a reconnaissance was made of 57,000 additional acres to determine the work needs. Examinations were completed in Washington and Smyth Counties. Control area examination in the counties of southwest Virginia showed a very small percentage of ribes comeback with the exception of a few isolated spots. No work had been performed in these counties since the re-mapping was completed in 1948.

A re-survey of 35,117 acres in Botetourt and Roanoke Counties revealed 17,291 acres of white pine. This years survey completes the work in Botetourt County. In 1953 it is planned to continue the survey already started in Roanoke County.

Eradication activities were carried on in six counties on State and private lands. These included Bath, Grayson, Nelson, Rockbridge, Smyth and Washington. In connection with this work 65,428 ribes were removed on 12,656 acres using 1,296 man-days, giving an average of 8.9 ribes per acre. This is a decrease of about 2 ribes per acre from the average number pulled during 1951. About 90% of the areas worked during the current year was first working. At the peak of the eradication season 23 men were employed to work on State and private lands. Labor was abundant, therefore, only the best laborers were employed.

Informational and service activities during the year consisted chiefly of contacts with various agencies interested in conservation, with veterans groups, and local civic organizations. Movies were presented in connection with 14 gatherings. Exhibits were placed at Alleghany, Rockingham, Shenandoah and North River Fairs. The mechanical exhibit was also used in connection with meetings of the Virginia Nurserymen's Association and the Southern Chapter of the National Shade Tree Conference at Richmond. A course of instruction was presented to the Forestry students at Virginia Polytechnic Institute. Exhibits were placed in store windows, etc., in connection with field activities in localities such as Fincastle, Eagle Rock and Buchannon. Various publications such as picture

sheet #22, Southern Appalachian Circular PA-138 and Leaflet No. 265 were distributed at each gathering.

Generally there were no changes in field practices and operations during the year. Work was conducted much the same as it has been for the past few years with the exception of control area examination. Here, as in some of the other states, areas are being examined by random sampling of likely ribes sites rather than the formal strip scouting that was used in connection with the examination of all areas in recent years.

During 1952 Virginia was set up as one district of the Southern Appalachian Area. The District Leader is Mr. George C. Cramer, whose office is located at Mt. Solon, Virginia. Control Aids Charles A. Rodamer and Martin Q. Miller assist Mr. Cramer with the supervision of field activities. Each of these Control Aids has his own sub-district. Generally speaking, Mr. Rodamer's district includes the counties from Rockingham - north and Mr. Miller's district includes the counties from Rockbridge - south. Each will be responsible for the actual field work in their counties. The central counties will be under the direct supervision of the District Leader.

There was little change in distribution of the pest during the year. Drought prevented heavy infection from developing on ribes. In the course of the work being conducted in the southwestern counties, white pine infection was discovered in two counties where it had not previously been found. One location was on Pole Bridge Ridge (Iron Mountain) Smyth County and the other was on Burnt Cabin Creek in Washington County.

The program in Virginia is progressing satisfactorily. With the expansion of the planting program additional vigilance will be required to see that plantations are not set out in association with ribes. Many areas of the State have been considered in the ribes-free category for a number of years. As the timber on these areas matures and the rate of cutting increases, disturbance to the soil and opening of the canopy is permitting an influx of ribes. This condition will necessitate some change in present control and a re-examination of many areas. It is a problem the blister rust organization should study now and develop procedures for handling in the future. It would appear that consideration should be given in the near future to revising the record system. Reports and records should reflect facts that can be used to meet the goals set up by management. Placing too much detail in records causes them

to lose their effectiveness and makes them of little value or interest to cooperators, legislators or the general public. Often records are maintained purely to perpetuate something that has been done for years with little regard for their current value. A study of the records along with the reports for which the data are needed might evolve something that would be brief, simple and quick.

1952 ERADICATION
STATE AND PRIVATE LANDS

County	Working	Acres	Ribes	Man-Days
Bath	1st	5,715	29,798	568
Grayson	1st	135	3,654	38
	2nd	250	9,565	89
Nelson	1st	1,415	2,569	111
Rockbridge	1st	3,716	7,956	227
	2nd	470	795	50
	Other	17	136	5
Smyth	2nd	197	544	50
	Other	490	6,268	104
Washington	2nd	50	535	9
	Other	201	1,608	45
Totals		12,656	63,428	1,296

WEST VIRGINIA

West Virginia has over 261,000 acres of white pine on State and private lands. In addition, about 42,000 acres are growing within the boundaries of the Monongahela National Forest and 31,000 acres on that portion of the George Washington National Forest in the State. Ribes-bearing acreage associated with the white pine on State and private lands is about 250,000 acres. All but 575 acres of this area has been worked once and 115,000 acres has been worked twice during the 19 years the program has been in operation. Much of the area now needing second work can not be performed on schedule and commercial damage is occurring here.

The present need is for a control program of sufficient size to permit completion of the second work and the scheduling of third work as required. On many areas the gap between workings has been so great that ribes are coming back to such an extent that they poise almost as great a problem as they did originally.

On areas where blister rust control has not been practiced and ribes are found in association with white pine, 100% of the white pines are infected. It is only a matter of time until the pines on these spots are completely eliminated, as a result of blister rust. On those areas where ribes were removed initially and second work has never been performed, damage is building up and the percentage of trees infected and dying are increasing greatly with each years delay in eradication. Reproduction - our future timber crop - is being severely damaged as the seedlings appear. In many places where the rust is prevalent few seedlings can be found while in adjacent areas where control practices have been conducted on schedule young trees are to be found everywhere. In one area on National Forest lands a tally was recently made (November 1952) and it was found that 98.5% of the trees were already dead or infected. On a similar area where r_bes eradication has been performed on schedule only 16.3% of the trees were dead or infected. On this area 94% of the small trees (those originating after the first eradication) are apparently free of blister rust.

The Division of Forestry in the West Virginia Conservation Commission is responsible for supervision of the States portion of the blister rust control program. Officials of this division are very much interested in the blister rust control program and are concerned regarding its present inadequacy. They are very much interested in expanding the program to the point where needed eradication can be performed according to a schedule that would guarantee prevention of commercial damage.

The regulatory work is handled by the State Entomologist of the Department of Agriculture. District Foresters, County Agents, and Soil Conservationists in the white pine counties have been helpful in promoting the program. The Department of Plant Pathology at West Virginia University has also taken a keen interest in the work throughout the years. The Forestry Department at the University has brought the West Virginia program to the attention of their students and have annually planned a session on blister rust for those attending summer camp.

The average rate of progress in West Virginia in the past few years has been only 25% of what it should be to prevent commercial damage. This applies only to the State and private lands. The program on the National Forests has been of sufficient scope to prevent commercial damage within those areas. It should be at least triple its present size and be maintained on that scale for the next five years in order to bring most of the areas to a maintenance status. When indicating that the program should triple its size the reference is made to the size of the joint federal-state program rather than the individual contributions of each. At the present rate the program is actually losing ground annually and until there is an enlargement no predictions can be made of how long it must be continued or what its final level should be.

Control area examination was conducted in Raleigh, Summers, Greenbrier, Pocahontas and Hardy Counties during the year. This involved the inspection of 37,542 acres. It was divided between general reconnaissance by trained personnel and formal strip scouting. Each year the amount of formal scouting is being decreased but it is still conducted on areas where ribes are widely scattered and determination of conditions can not be made by random sampling of likely ribes locations. In West Virginia, ribes comeback, particularly in Pocahontas, Pendleton and Hardy counties is quite heavy. Delimiting some of the areas to be worked by strip scouting is still the most satisfactory method of examination on many areas in those counties. Reconnaissance at Coopers Rock, Cabwaylingo and Kanawha State Forests was also conducted at the request of the State Forester to determine whether ribes eradication was needed to protect plantations on these forests.

Re-survey or re-mapping was performed on 47,759 acres of control in Hardy, Monroe and Summers Counties. This included a complete coverage of Monroe County which had not been previously covered by the grid system and small portions of Hardy and Summers Counties. Re-mapping will continue in Summers County during the coming year.

Every effort was made to perform as much ribes eradication as possible with available funds. During the year eradication work was done in Hardy, Pendleton, Pocahontas, Morgan and Mercer Counties. It included eradication on the Camp Creek State Forest and the newly acquired Sleepy Creek State Forest. The only initial eradication was on the Sleepy Creek State Forest. The balance was second or "other". Some 49,000 ribes were removed from 6,117 acres and 946 man-days were expended on this phase of the work. A maximum of 41 seasonal employees were used on the cooperative project at the peak of the season.

In connection with informational activities, the blister rust films were used in Monroe County last February. They were shown at various schools and to farm trainees. They were also used at meetings of the West Virginia Farmers Game Protective Association, the Ballengee Farm Club and the Ruritan Club at Green Sulpher Springs. Exhibits were placed at the Pocahontas County Fair, the West Virginia State Fair and at the Third West Virginia Woodland Show held at the 4-H Camp, Beckwith, Fayette County. District Leader Keaton had excellent cooperation from the various newspapers in the southeastern part of the State. Many fine and timely articles appeared in the Monroe County Watchman, the Hinton Daily News, the Beckley Post Herald and the Raleigh Register. Two Sunday issues of particular interest were published by the Raleigh Register. These were magazine type supplements devoted to forestry and the West Virginia State Fair. A meeting was held at Camp Wood, Neola, West Virginia during the summer to acquaint the West Virginia University Forestry Students with blister rust, the status of the program in the State, and methods of control.

During the year West Virginia and Kentucky were set up as a District under the supervision of District Leader Glenden E. Keaton of Pipestem, West Virginia. Control Aids Clarence M. Fultz and Delbert L. Gillispie were assigned sub-districts in West Virginia. In addition to Mr. Fultz's sub-district, which comprises the northeastern section of West Virginia, he will be responsible for control operations in adjacent Maryland counties. When the districts were set up Maryland was not included in any of them. The Area Office will be responsible for future plans in connection with the Maryland work and they will be carried out through Mr. Fultz.

Blister rust was found for the first time in Monroe County on white pine in February 1952. The infection area is on Turkey Creek near Zenith. In the area 34 white pines were found with blister rust cankers. Practically all of these cankers appeared to be of 1945 origin. Several large ribes were found growing in the general vicinity of the infection. Plans have been made to work this area in the spring of 1953. There is quite a sizable stand of good white pine in the vicinity of the diseased site.

As mentioned earlier in this report, the chief need in West Virginia is for a program with much larger scope that would bring the area worked initially back on schedule. In conferences with the Forestry Division, a study of the situation indicated that a joint expenditure of $50,000 annually for field work for the next four years should put the program back on schedule and make it possible to decrease expenditures from that point. Each year the step-up is delayed will cause an increase in the funds needed to bring it back on schedule and subject the pine stands to heavy increasing infection.

1952 ERADICATION
STATE AND PRIVATE LANDS

County	Working	Acres	Ribes	Man-Days
Greenbrier	Other	35	94	4
	Maint.	105	100	12
Hardy	2nd	440	4,096	51
Mercer	2nd	2,120	29,382	420
	Other	232	1,736	52
Morgan	1st	215	3,385	36
Pendleton	2nd	1,070	4,666	130
Pocahontas	Other	1,852	5,455	230
	Maint.	48	104	13
Totals		6,117	49,000	948

NATIONAL FOREST LANDS

Cherokee

George Washington

Jefferson

Monongahela

NATIONAL FOREST LANDS

Cherokee National Forest

The Cherokee National Forest in Tennessee contains 250,000 acres of white pine according to the blister rust survey records. Most of this white pine lies on the western slopes of the Blue Ridge Mountains. The ribes-bearing acreage found on this forest is slightly over 4,000. These areas do poise a problem, particularly at the higher elevations where conditions are very favorable for ribes growth. Although the ribes areas are small in proportion to the total white pine, heavy damage could be done should bushes be permitted in these areas since most of the ribes are surrounded by thrifty pine.

The purpose of the present program is to prevent recurrance of ribes on known areas and to determine their distribution generally throughout the forest. This information will be of particular value to those concerned with future planting programs. In 1952 work on the Cherokee National Forest was confined to the areas on the Watauga Ranger District in northeast Tennessee. The work performed included examination of 1,270 acres. Although no ribes were removed on federal lands some were found in connection with the examination and the eradication was performed under the State project on these adjacent lands. Most of the control area examination is being conducted by sampling likely ribes sites rather than the formal strip scouting previously used. Before going to the field the areas are located as accurately as possible on the new TVA topographic maps and these maps are used as a guide. They have been found sufficiently accurate and complete to give excellent control points within reasonable distance of most areas. Use of these maps has eliminated much costly survey in connection with the program. Examination of areas in the Watauga District will be resumed in the spring of 1953.

The work on the Cherokee National Forest is under the supervision of District Leader, W. A. Stegall, Jr., whose headquarters are located in Asheville, North Carolina. During the past year Mr. Stegall made an effort to acquaint rangers and others connected with the Forest Service with the damage that can be done

by blister rust. These individuals were taken on a "Show Me" trip to the Ashe County Plot in North Carolina where blister rust has been permitted to develop normally. The individuals showed much interest in what they saw. No blister rust has been found on the Cherokee National Forest. Having seen the disease in the field, these individuals will be able to identify blister rust should it appear.

George Washington National Forest

The blister rust records indicate that the George Washington National Forest has 191,000 acres of white pine. Ribes are found on about 130,000 acres within the control zone for this pine. At the end of 1952 only 439 acres remained to be worked initially. The program has been striving for a number of years to complete initial work and for all practical purposes it can be considered in that category. This million-acre forest presents the largest problem for the blister rust control organization of any in the Southern Appalachian Area. Ribes are found generally on sites above 3,500 feet and in the cool coves below this elevation. Fortunately comeback, following eradication, has been light at the lower elevations and not extremely serious at the higher elevations. Dense overstory has been a very helpful factor in preventing recurrance at all elevations. The heaviest ribes areas are found in the Dry River and Deerfield Ranger Districts. They are quite widely distributed on the Warm Springs Ranger District but regeneration here has been low.

The present problem requires working the areas initially covered on a 4 - 8 year rotation depending on the number of bushes found in connection with the last eradication. Areas should be reexamined at definite intervals to prevent comeback.

Blister rust is now scattered throughout the forest. On those areas where control work has not been done or where they were abandoned because of the high cost of control, the disease has practically wiped out the pine. On all sites where control work was done and ribes have been kept out, control has been effective. Very little damage can be found. In fact the effectiveness of control is so complete that the question sometimes arises as to whether or not there is a need for the work. This condition can be maintained only by utmost vigilance. Observations indicate that white pine cannot be grown on this Forest where ribes occur.

The field work on the George Washington National Forest is conducted by personnel of the Bureau in accordance with plans approved by the Forest Service. Plans are prepared by Bureau personnel in cooperation with the Resourses Management Assistants. They are submitted to the Regional Office at Philadelphia for their approval. The Regional

Office makes budget requests as determined from the plans. The various personnel on the Forest have been very cooperative in the program. Office space for the Area Blister Rust Control office is provided by the Forest in space allotted to them in the Federal Building at Harrisonburg. They also provide storage space for supplies and equipment at Bridgewater, Virginia and other points in the various ranger districts according to needs.

Although only 37% of the control area on the Forest is on maintenance, it has been possible to reduce the size of the program during the past year.

A plan has been prepared which schedules coverage of all present work areas during the next eight years. This plan should provide control for the present pine acreage. However, the acreage is increasing annually and according to the blister rust records, white pine has increased from 70,000 acres in 1943 to 191,000 acres at the present time. Reproduction is appearing wherever seed trees are found. This is causing an extension of control into ribes areas previously outside the zones. Provisions will have to be made for the protection of this new pine. The Forest Service is showing much interest in the white pine on the Forest. They consider it one of their most valuable species. It not only produces fine lumber over a relatively short period of time but is also used extensively by wildlife technicians, water resource managers, recreationists and flood control specialists in their programs.

Among the accomplishments for 1952 was the examination of 19,500 acres within the present control area and 16,000 acres of adjacent lands. The work was done in Alleghany, Augusta, Bath, Highland, Nelson, Rockbridge and Rockingham Counties, Virginia and Hardy and Pendleton Counties, West Virginia. The examination reveals that there is a considerable comeback of ribes on some areas in Augusta, Bath, Highland and Rockingham Counties, Virginia.

Eradication was done in Augusta, Bath, Highland, Nelson, Rockbridge and Rockingham Counties, Virginia and Hardy and Pendleton Counties, West Virginia. In the course of the work 174,852 ribes were pulled from 34,248 acres and 6,764 man-days were involved in this portion of the program. Ribes destroyed averaged 5.1 per acre with an average coverage of 5 acres per man-day. This average ribes figure is quite low considering that approximately 7,500 acres were covered for the first time.

Under better forest protection and management, the natural trend has been toward a mixed conifer-hardwood forest. White pine is the conifer best adapted to a wide variety of sites from very dry to moist.

The dry sites probably offer the greatest chance for increasing white pine acreage. Pines utilize the dry sites more effectively than hardwoods, for the hardwoods found there are slow growing and generally very defective. The problem of ribes control is less on the dry sites than on others. For all these reasons there is a definite trend toward actively managing for increased white pine stocking on the dry slopes.

The use of various herbicides in treating reproduction areas of mixed conifer and hardwoods promises greater success in bringing the conifers through than competing hardwoods. Treatments with herbicides in reproduction areas were initiated this past year. Initial results indicate more widespread use of chemicals will be made and a greater stocking of white pine will be obtained.

The George Washington National Forest assigned Mr. Glenn E. Smith to Blister Rust Control and Timber Stand Improvement early in the year. It is his responsibility to correlate blister rust control activities with forest management plans. Mr. Smith has worked very closely with Bureau personnel and has been extremely helpful to them in deciding areas to be worked and establishing priorities for such areas. The correlating of management plans and eradication activities is making the eradication job easier and much more effective. District Leader George C. Cramer is responsible for control operations on the Virginia portion of this Forest. He is assisted by Control Aid Charles A. Rodamer. Control Aid Clarence M. Fultz handles the work in the West Virginia portion of the forest.

The very dry season during the spring when aeciaspores were being liberated was not conducive to their germination on ribes. Therefore, very little infection on ribes was observed during the year. Practically all that was found was at the highest elevations where a few pines remain in association with the bushes.

On one area in the George Washington National Forest in West Virginia a tally was made in November, 1952 that shows 98.5% of the trees were dead or infected. This area has not been included in the control since 1943. On a similar area where ribes eradication was performed in 1943, 1947 and 1951, only 16.3% of the trees were dead or infected. It is interesting to note on this area that 94% of the small trees (those originating after the first eradication) are apparently free of blister rust. Those concerned with restocking of white pine are anxious to protect similar areas before all the seed trees are killed by blister rust. They know that white pine grows better on some of these spots at high altitudes than any other species.

It is recommended that Bureau personnel continue to cooperate to the utmost with management personnel to find ways and means of carrying on an effective control program at the lowest possible cost.

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1952 ERADICATION
ON
GEORGE WASHINGTON NATIONAL FOREST

County	Working	Acres	Ribes	Man-Days
Augusta	1st	1,651	4,686	131
	2nd	7,131	34,329	1,276
	Other	8,136	22,876	1,412
Bath	1st	495	none	13
	2nd	1,105	4,458	221
Hardy	2nd	270	1,371	38
	Other	1,728	6,479	267
Highland	1st	1,004	12,381	99
	2nd	4,780	51,736	1,227
	Other	2,020	4,675	447
Nelson	1st	2,117	4,642	256
Pendleton	Other	1,029	5,399	172
Rockbridge	1st	2,230	10,395	347
	Other	75	225	8
Rockingham	2nd	1,837	7,006	419
	Other	2,131	4,194	433
Totals		37,739	174,852	6,766

Jefferson National Forest

The Jefferson National Forest has 56,000 acres of white pine within the present blister rust control area. A little over 15,000 acres of ribes have been found in association with this pine. Most of the white pine is found in the Wythe and Holston Districts. Ribes areas are generally confined to the mountain sections in these districts. There are also some ribes in association with white pine in the Glenwood District. Practically none have been found in the New Castle District. No white pine is known to occur on the Clinch District in native stands but present timber management plans include the planting of white pine in some of the areas cut over recently. Little is known about ribes distribution in this district but none were found in connection with an examination of areas where plantings were made during the past year.

The purpose of the present program is to re-examine the known ribes areas and perform necessary eradication. White pine reproduction is excellent on parts of the Holston and Wythe Ranger Districts and the areas are expanding. In many cases it will be necessary to re-map these areas to include them in the control.

The blister rust control program on the Jefferson National Forest has been conducted by the Bureau of Entomology and Plant Quarantine on a reimbursement basis. Bureau personnel maintain the records for this work and submit plans through the Forest Supervisor to the Regional Office along with their recommendations for future work. Mr. Paul E. Sundheimer, Resources Management Assistant for the Forest is very much interested in white pine and is giving it much consideration in management plans. He has been very cooperative and has given valuable assistance to the program. It is the opinion of blister rust personnel that the control of ribes can be done easier and more effectively by correlating eradication activities and management plans. More and more is being done cooperatively to this end.

In July 1952 a re-examination of areas on the Jefferson National Forest was started in southwest Virginia. Control Aid Miller has been in charge of this work and is making excellent progress. The examination has revealed only small areas where ribes comeback is heavy. For example, in connection with the examination of 6,667 acres it has been necessary to perform eradication on only 7% of the acreage. In addition to the examination within the control area, 5,000 acres were also examined outside the present control in Scott, Wise, Grayson, Washington and Smyth Counties.

Eradication work was done on 470 acres, A total of 31,252 ribes were removed. This work required 145 man-days. The average number of ribes removed per acre was 66. This average figure is the highest of any eradication performed on the National Forests during 1952. It does point out that even though ribes are not recurring on a large portion of the acreage previously worked, where there is a tendency for them to come back they do so quite vigorously and rapidly. Frequent checking will be required to prevent damage.

During the course of control area examination, infection on white pine was found for the first time in Smyth County on Pole Bridge Ridge (Iron Mountain) and in Washington County on Burnt Cabin Creek.

1952 ERADICATION

ON

JEFFERSON NATIONAL FOREST

County	Working	Acres	Ribes	Man-Days
Smyth	Other	20	17	1
Washington	2nd	225	27,080	69
	Other	225	4,155	75
TOTAL		470	31,252	145

Monongahela National Forest

Records indicate that there is 46,800 acres of white pine on the Monongahela National Forest. Most of this is located in Greenbrier and Pocahontas Counties. A small amount is found in connection with the Horse Shoe Run Recreation Area in Tucker County and on Clover Run where a plantation was set out in 1932-33. Slightly over 14,000 acres of ribes have been found in the Forest. The entire acreage has been worked initially and almost 94% is on maintenance.

The future problem on the Monongahela National Forest does not appear to be great at this time. Past work has been done on schedule and control area examination at intervals of five to eight years, together with necessary eradication, should keep commercial damage from the white pine stands. If the white pine areas continue to increase it will be necessary to expand the control and perform eradication where it has never been done in the past.

Work on the Monongahela National Forest has been done by the Bureau for the past nine years on a reimbursement basis. Each year plans are submitted through the Forest Supervisor to the Regional Office and budget requests are made in accordance with these plans. Control Aid Delbert L. Gillispie is in charge of field activities.

The accomplishments in 1952 include examination of 9,000 acres within the forest boundary. Most of this examination was performed by the field supervisors. It was gratifying to note that no serious comeback of ribes was observed. A total of 20,643 ribes were removed from 3,575 acres and involved 466 man-days. Approximately 2/3 of this eradication was on National Forest lands and the balance was on private lands where the work was necessary to protect National Forest pine.

No work was included for 1953 in the plan for Monongahela National Forest which was prepared in 1951. Since the preparation of that plan it was learned that the Forest Service was arranging for the removal of low quality oak in the Upper Meadow Creek section and were desirous of converting this area to white pine. White pine grows very well here, especially if it can be favored a little in management plans. This area will be surveyed during 1953 to determine the pine and control acreage involved.

1952 ERADICATION
ON
MONONGAHELA NATIONAL FOREST

County	Working	Acres	Ribes	Man-Days
Greenbrier	Other	2,895	20,366	414
	Maint.	680	277	52
Total		3,575	20,643	466

No work was performed on the following National Forests during 1952. The status of each remains as shown in the 1951 report:

Region 7

Cumberland National Forest

Region 8

Chattahoochee National Forest
Nantahala National Forest
Pisgah National Forest
Sumter National Forest

NATIONAL PARK LANDS

Shenandoah

Great Smoky Mountains

Blue Ridge Parkway

NATIONAL PARK LANDS

Shenandoah National Park

The Shenandoah National Park has 3,080 acres of white pine in control areas. Much of this pine is of particular aesthetic value, being located at recreational areas, camp sites, and along the picturesque Skyline Drive. Ribes were numerous at the beginning of the program since most of the sites are at the higher elevations where they find growing conditions ideal. The control area involves 14,270 acres. Of this area, 13,821 acres or 96.8 percent is now on maintenance.

The purpose of the control program on this park is to keep ribes populations suppressed so that damage will not occur. The immediate objective is to get the remaining control area on maintenance. It is planned to accomplish this next year. Once all areas are on maintenance, examination at intervals of seven years along with a small amount of eradication work should provide control.

Damage has been extremely heavy. Many fine trees have succumbed to blister rust during the past decade. Several areas have been completely abandoned because of the high incidence of blister rust. Those areas still continued in the active control zone give high hope for successful control. Young trees, free from blister rust, are now appearing in areas where their parent trees had been infected lethally only a few years ago.

The control program on the Shenandoah National Park is conducted by personnel of the National Park Service. Long range plans are prepared jointly by representatives of the Bureau of Entomology and Plant Quarantine and the Park Service. Technical advice and guidance in carrying out the plans is provided by the Bureau and reports of accomplishments are prepared jointly. The blister rust control program on the Shenandoah National Park was supervised by Assistant Chief Ranger G. G. Bruce and Checker E. F. Benton under the direction of Chief Ranger Granville E. Liles.

As of the end of 1952 the status of the work on the Shenandoah National Park was as follows:

White Pine in Control Area	3,080 acres
Control Acreage in Park	14,270 acres
First Working	14,270 acres
Control Acreage on Maintenance	13,821 acres
Percentage of Control Acreage on Maintenance	96.8%

The number of ribes found per acre continues low as it did in 1951. Regeneration has been limited by an ever-increasing cover of hardwoods. This, along with effective eradication performed on schedule, is gradually eliminating ribes from the control areas.

During 1952 control area examination was conducted on 2,190 acres. This was a formal check of Big Meadows, Pass Mountain and Hazel Mountain areas. In connection with the examination of Big Meadows a count of the number and condition of the white pine was made. A total of 790 white pines were counted within the control area. Of this total 180 trees or 23% were infected with blister rust. This infection apparently occurred prior to the last working of the area. Sixty-two trees had been killed apparently by blister rust but these were not included in the total.

Eradication was performed on the Pinnacles and Spitler Pine areas. This consisted of 212 acres of crew work for the protection of 107 acres of white pine by removal of 1,763 ribes.

In addition to control area examination and ribes eradication, accomplishments included the following:

1. Work on field and permanent control maps.
2. Bringing control records up to date.
3. Staining all reference and grid corner stakes.
4. Correlating grid reference stakes with Skyline Drive mile posts.
5. Revision of the work plan summary.

It is recommended that as much control area examination as possible be done in the future by general reconnaissance of likely ribes sites rather than formal checks on designated strips. This should reduce the time needed to determine whether eradication is necessary. If only occasional bushes are found in connection with the examination it would be worth while to pull them at that time. This will tend to cut down the areas to be scouted by crews.

1952 Examination

Area No.	Area Name	Acres	Man-Days
4	Big Meadows	995	22
14	Pass Mountain	625	18
42	Hazel Mountain	570	16
	Totals	2,190	56

1952 Eradication

Area No.	Working	Acres W.P.	Acres Control	Acres Worked (All Crew)	Ribes Destroyed	Man-Days
2	3/other	57	264	135	961	45
8	3/other	50	212	77	802	48
Totals		107	476	212	1,763	93

Great Smoky Mountains National Park

The Great Smoky Mountains National Park has 67,905 acres of white pine in control areas. Of the total acreage 55,799 is in Tennessee and the remaining 12,106 acres is in North Carolina. The problem acreage, where ribes have been found in association with white pine is relatively small. Most of this acreage has been worked two or more times and 94.5% of the total control area comprising 110,904 acres is on maintenance.

The work on the Great Smoky Mountains National Park was started before blister rust infection occurred in the general area. Therefore, damage to the white pines has not been a factor like it has been on Park areas farther north.

The major job in 1952 was the continuation of re-survey on the Fontana addition in the Park which was started in 1951. During 1952 crews covered 2,655 acres in 2,650 man-hours. This area is located in an isolated section of North Carolina and it cannot be reached without much difficulty. All the work was conducted from a camp and a considerable amount of walking was involved in getting to and from the work areas. The job was not completed but no doubt will be in the spring of 1953. Findings in connection with the re-survey will be reviewed when the job is completed and eradication needs determined.

In 1953 control area examination in the Catalooochee watershed will be performed following completion of the Fontana addition survey.

Blue Ridge Parkway

No blister rust control work was performed during 1952. The status remains as reported in 1951.

State	Land Ownership	Total Acreage	Acreage W. Pine	Net Acreage Worked				Acreage in Control Area		
				Pre-Maintenance Work			Maintenance work	Now on Maintenance	In Need Of Pre-Maintenance Work	
				First	Second	Other			First Work	Remark
Delaware	State & Pri.	6,186	242	6,186	-	-	-	6,186	-	-
Georgia	"	324,452	248,576	324,452	678	441	-	324,302	-	[illegible]
Kentucky	"	114,312	31,199	114,312	-	-	-	114,312	-	-
Maryland	"	163,590	70,550	163,590	16,986	27,378	-	152,227	-	11,363
N.Carolina	"	1,361,532	581,619	1,361,532	6,631	2,495	-	1,358,872	-	2,[illegible]
S.Carolina	"	77,008	45,398	77,008	25,935	-	-	77,008	-	-
Tennessee	"	1,068,275	461,565	1,068,275	13,196	5,235	-	1,050,433	-	17,[illegible]
Virginia	"	1,527,243	554,228	1,502,430	35,969	10,425	685	1,443,632	24,313	50,[illegible]
West Va.	"	681,090	261,560	680,515	114,813	19,087	153	518,101	576	162,[illegible]
Sub-Total	State & Pri.	5,323,688	2,254,937	5,298,300	214,208	65,061	838	5,045,073	25,888	253,[illegible]
				National Forests						
Georgia	Chattahoochee	349,903	295,902	349,903	330	97	-	349,713	-	18[illegible]
Kentucky	Cumberland	32,002	16,980	32,002	65	65	-	32,002	-	-
N.Carolina	Nantahala	62,709	42,138	62,709	7	-	-	62,702	-	7
N.Carolina	Pisgah	161,752	92,697	161,752	2,943	1,780	-	158,535	-	3,21[illegible]
S.Carolina	Sumter	53,862	18,794	53,862	3,700	-	-	53,862	-	-
Tennessee	Cherokee	484,572	250,378	484,572	2,105	41	-	481,266	-	3,30[illegible]
Virginia	Jefferson	107,474	55,084	107,474	3,962	1,101	-	102,889	-	4,5[illegible]
Va.&W.Va.	Geo. Wash.	421,931	191,267	421,492	84,163	51,542	-	366,778	439	54,7[illegible]
W.Virginia	Monongahela	89,559	46,854	89,559	11,606	7,185	680	84,176	-	5,[illegible]
Sub-Total	Nat. Forests	1,763,764	1,010,094	1,763,325	108,879	61,811	680	1,691,923	439	71,[illegible]
				National Parks						
N.C. & Va.	Blue Ridge	13,890	5,773	13,890	2,087	119	-	11,606	-	2,[illegible]
N.C. & Tenn	Great Smoky	110,904	67,905	110,904	413	560	-	104,855	-	6,0[illegible]
Virginia	Shenandoah	14,270	3,080	14,270	5,012	4,323	-	13,821	-	44[illegible]
Sub-Total	Nat. Parks	139,064	76,758	139,064	7,512	4,802	-	130,282	-	8,[illegible]
				Indian Service						
N.Carolina	Cherokee I.Res.	445	22	445	-	-	-	445	-	-
GRAND TOTAL: A ll Ownersh		7,226,96[illegible]	3,341,811	7,301,134	330,599	131,674	1,518	6,867,723	25,627	433,411